THE

NATURAL HISTORY

OF

BRITISH INSECTS;

EXPLAINING THEM

IN THEIR SEVERAL STATES,

WITH THE PERIODS OF THEIR TRANSFORMATIONS, THEIR FOOD, ŒCONOMY, &c.

TOGETHER WITH THE

HISTORY OF SUCH MINUTE INSECTS

AS REQUIRE INVESTIGATION BY THE MICROSCOPE.

THE WHOLE ILLUSTRATED BY

COLOURED FIGURES,

DESIGNED AND EXECUTED FROM LIVING SPECIMENS.

BY E. DONOVAN, F.L.S.

AUTHOR OF THE NATURAL HISTORIES OF BRITISH BIRDS, SHELLS, &c. &c.

VOLUME I.

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TO

T. MARSHAM AND A. M'LEAY, ESQRS.

TREASURER, AND SECRETARY,

OF THE

LINNÆAN SOCIETY.

MY DEAR SIRS,

IF I were not anxious to acknowledge you amongſt the number of thoſe, whoſe uſeful information has in various inſtances tended to improve this Work, motives of eſteem would alone induce me to inſcribe it to you. The reflection, that for ten years paſt, it has been ſanctioned with no inconſiderable ſhare of public approbation, will not allow me to believe it unworthy of your attention, and its concluſion affords me the beſt opportunity to teſtify the favour, as well as the reſpect, with which

I remain,

Moſt ſincerely yours,

E. DONOVAN.

ADVERTISEMENT.

AT the concluſion of a Work which has been publiſhed in a progreſſive manner, and either in the form of Monthly Numbers or Annual Volumes, has already paſſed the ordeal of public criticiſm, the Author can have little to advance in favour of the deſign, or the manner in which it has been executed. His chief object was to illuſtrate the ſcience of Entomology on a more extenſive ſcale than had been previouſly attempted in this Country, and he truſts, upon the whole, his endeavours in this reſpect have not been fruitleſs.

As a general Hiſtory of the Inſect Productions of Great Britain, it is preſumed this work will be found ſufficiently copious and inſtructive; for, though the Author has purpoſely avoided entering too deeply amongſt the minutiæ of the Inſect race, he has been careful to include whatever is intereſting. The ſelection of Papiliones or Butterflies is extremely ample, as well as that of the Sphinges

or Hawk Moths: none of the larger kinds of Phalænæ of Moth tribes have been overlooked, and the number of thoſe of an inferior ſize that are extremely rare, or particularly beautiful, are altogether conſiderable. Those are chiefly alluded to, becauſe general obſerves are more immediately intereſted with the uncommon elegance of the Lepidopterous tribes than others. In general, however, the reader will meet with ſome information in every department, as nothing material in any cabinet to which he as acceſs has been omitted.

The arrangement of the ſubjects is for the moſt part conformable to the ſyſtem of Linnæus, with occaſional reference to the writings of Fabricius. This is deſigned to aſſiſt the labours of the practical Entomologiſt, and by combining novelty with beauty, and ſcientific information, may induce many other attentive obſervers of nature, to purſue this pleaſing and intereſting ſtudy.

The Author cannot but feel ſome degree of ſatisfaction in having, at leaſt, fulfilled the chief object of his firſt deſign; and, after the labour of ten years, completed a Work, perhaps the moſt extenſive that may ever appear, in this form, on the ſubject of Britiſh Entomology; but this conſideration will not permit him to entirely abandon his favorite purſuit: his attention will be ſtill directed to a ſcience in which the paſt indulgence of a liberal pub-

lic

lic, have induced him to believe he may ſtill be uſeful, and though he cannot, conſiſtently with the conditions of this undertaking, extend it further at this time, ſhould a ſufficient number of new and valuable ſpecies occur, he will certainly be tempted to tranſgreſs, and make ſome additon to the preſent ſelection.

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ſuberaria, Phalæna	251	1.
ſulcatus, Dytiſcus	68	5.
ſulphuralis, Phalæna	339	1.
Sylvanus, Papilio	254	2.
ſyringaria, Phalæna	181	
tecta, Meloe	240	
tenax, Proteus	32	3. 4.
tenebricoſa, Chryſomela	276	
tenuiroſtris, Curculio	249	3.
terreſtris, Apis	88	1.
terreſtris, Julus	207	
teſtudinarius, Scarabæus	70	1.
thoracica, Silpha	63	1.
Tiliæ, Sphinx	325	
Tipuliformis, Sphinx	52	
——— magnified	53	
tragopoginis, Phalæna	223	2.
trepida? Phalæna	239	1.
trilineata, Muſca	151	5.
trimacula, Phalæna	352	
triplacia, Phalæna	298	
Tritophus, Phalæna	359	
trochiformis nigra, Vorticella	26	
tumulorum, Apis	151	2.
varia, Phryanea	277	1.
varia, Gryllus	79	2.
variegatus, Meloe	67	
Verbaſci, Phalæna	257	
vermicularis, Trichoda	17	
Vernaria, Phalæna	310	
verſicolora, Phalæna	158	
veſpertaria, Phalæna	233	3.
Veſpilio, Silpha	23	
vibrans, Muſca	346	
vidua, Phalæna	246	1.
villica, Phalæna	71	
vinula, Phalæna	85	
violaceus, Carabus	222	1.
violaceus, Cerambyx	64	1.
virgaureæ, Papilio	173	
virgo, Libellula	36	
viridana, Phalæna	144	
viridis, Cicada	54	3.
viridis, vorticella	29	
viridis, Bupreſtis	174	
viridiſſimus, Gryllus	130	
vitellinæ, Tenthredo	88	3.
vitellinæ, Cicada	54	3.
vittatus, Cimex	252	1. 1.
vulgaris, Veſpa	226	
vulgata, Ephemera	128	
vulgata, Libellula	237	1.
Uddmanniana, Phalæna	154	2, 3, 4.
ulmata, Phalæna	293	
Umbratica, Phalæna	262	2.
undulata, Phalæna	342	
urceolaris vorticella, (Branchionus)	17	
Urticæ, Papilio	55	
urticata, Phalæna	349	2.
uſtularia, Phalæna	82	
uvula, Trichoda	8	
Wavaria, Phalæna	196	
Zic-zac, Phalæna	119	
zoëgana, Phalæna	106	2.
zonata, Sphinx	195	

THE

NATURAL HISTORY

OF

BRITISH INSECTS

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A

SLIGHT SKETCH

OF THE

ANIMAL SYSTEM.

LINNÆUS divided the Animal Syſtem into ſix claſſes.

Claſs I. MAMMALIA. Suckle their young.
II. AVES. (Birds) covered with feathers.
III. AMPHIBIA. Lungs arbitrary.
IV. PISCES. (Fiſhes) breath by gills not arbitrarily.
V. INSECTA. (Inſects) two antennæ.
VI. VERMES. No head.

Inſects therefore compoſe the fifth Claſs in the Syſtem, and are divided into ſeven Orders.

Order I. COLEOPTERA. Wings two, covered by two ſhells, divided by a longitudinal ſuture.

II. HEMIPTERA. Shells or covers of the wings ſomewhat ſoft, and incumbent on each other.
III. LEPIDOPTERA. Wings four, imbricated with minute ſcales.

IV. NEUROPTERA. Wings four, naked, tranſparent, reticulated, with veins or nerves. Tail without ſting.

V. HYMENOPTERA. Wings four. Membraneous. Tail of the female armed with a ſting.

VI. DIPTERA. Wings two.

VII. APTERA. No wings.

TRANSFORMATIONS OF INSECTS.

Many of our readers are no doubt acquainted with the ſingular transformations Inſects undergo, but we truſt thoſe will pardon a digreſſion which may be uſeful to thoſe who have not that knowledge; and without premiſing farther we proceed to inform them, that Inſects in general undergo a material change in their form at ſtated periods of their lives; there are ſome, though few, which burſt forth from the egg perfectly formed, as *Spiders*, &c. but the greater part exiſt in four ſeveral ſtates: the firſt that of the egg, whence the Larva, or Caterpillar is produced; it is at firſt very minute, but in this ſtate it feeds, ſome kinds on one or two plants only, others promiſcuouſly on many, they therefore continue to increaſe in ſize, moulting ſeveral times the outer ſkin, until the deſtined period of their dormant ſtate approaches; they then ſpin a web more or leſs ſtrong according to the ſpecies, and are converted into the aurelia, or chryſalis; and laſtly they burſt forth in due ſeaſon perfectly formed. It is under this form they propagate a future race, and themſelves periſh, as they rarely ſurvive the inclemencies of the winter.

The antient naturaliſts held ſuppoſitions very imperfect and erroneous relative to thoſe transformations, but *Malpighi* and *Swammerdam* proved by many accurate examinations clearly, that thoſe changes were not ſuddenly effected, but gradual; and that under the form of the Caterpillar they could diſtinguiſh the future changes the Inſect would undergo.

PLATE

PLATE I.

PHALÆNA PAVONIA.

EMPEROR-MOTH.

GENERIC CHARACTER.

Antennæ tapering from the baſe: wings in general deflected when at reſt. Fly by night.

Bombyx.

SPECIFIC CHARACTER

AND

SYNONYMS

Wings rounded, grey, clouded, and barred with brown; an ocellar ſemitranſparent ſpot in the middle of each wing.

PHALÆNA pavonia: alis rotundatis griſeo nebuloſis ſubfaſciatis: ocello nictitante ſubfeneſtrato. *Linn. Fn. Suec.* 1099.

The male is ſmaller than the female, its colours much darker on the upper wings, the lower orange, and the antennæ as in the reſt of the Bombyces conſiderably pectinated, while thoſe of the female are ſetaceous. The caterpillar is of a green colour, with a black ring ſurrounding each joint, and every ring is beſet with ſeveral yellowiſh tubercles.

The conformity and likeneſs which prevails between the male and female throughout the greater part of the animal ſyſtem, cannot however in Inſects be implicitly depended on; the difference in many is ſuch as even to miſlead ſome very accurate Entomologiſts, the illuſtrious Linnæus not excepted. In this ſpecies it is not ſo great as in many, but ſuch as entitles the female to a figure in a future plate: Our figure is of the male.

Albin, (*Plate* 25, *Subject* 37,) has given a figure of the male and female on the ſame plate, and deſcribes a male to have changed to the aurelia ſtate as in our plate repreſented *July* 16, and *March* 18 following to have produced the Fly. But the time of their appearance depends on the proportion of heat or cold; as the author's ſubject was preſerved from the ſeverity of winter, in a warm room. The uſual time to find them in the caterpillar ſtate is Auguſt, and in April the Fly.

The ſingular proviſion which nature makes for the protection of this Fly deſerves particular notice; when the time of its continuation in the caterpillar ſtate is expired, by much labour it forms a kind of bag or purſe, of a very tough ſubſtance; this it fixes againſt the trunks of trees, &c. by a number of hairs or filaments, which remain on the external ſurface. It lines the outer caſe by one of a finer texture, the top of which is cloſed by ſeveral briſtles that unite in the center, exactly repreſenting a cap, and excludes almoſt the poſſibility of its receiving an injury during this defenceleſs ſtate. In this bag it paſſes to the aurelia, and remains until the birth of the perfect inſect.—Our figure repreſents the chryſalis or aurelia in the bag; part appears torn away to exhibit its ſituation therein.

Were we to unite the ſeveral accounts of authors reſpecting its food, it would appear to be a general feeder; it will live on the roſe, the elm, and the willow; and on thorns and brambles particularly.

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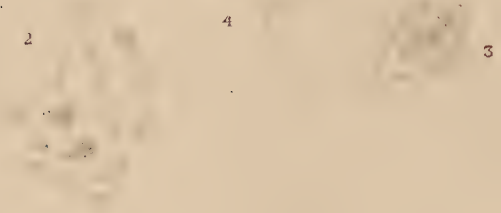
2
4
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PLATE II.

FIG. I.

MONOCULUS QUADRICORNIS.

APTERA.

GENERIC CHARACTER.

Legs from four to eight, formed for ſwimming, and very long: body covered by a ſhell divided into ſegments: Antennæ either four, two, or none; eyes one, or two, approximate and fixed in the ſhell: feelers four, and in continual motion when ſwimming: poſterior ones very ſmall and hooked.

SPECIFIC CHARACTER.

Antennæ four: tail ſtraight and bifid; the diviſions ramoſe.

Although this inſect may have been noticed by many, ſwimming, or rather darting ſwiftly in various directions in water; its minuteneſs is ſuch, that the moſt attentive could never have comprehended preciſely its component parts. The microſcope diſcovers it to be an animal of ſuch ſingular formation as highly to deſerve the attention of the naturaliſt. It is covered by a hard ſhelly ſubſtance, divided into annulations, and armed in ſeveral parts with ſpines aud briſtles; notwithſtanding which, this ſhell is ſo tranſparent that the whole motion of the inteſtines is very viſible by a good magnifier.

It muſt be granted that, but for the microſcope, the wonders of the minute creation, would be to us entirely unknown; our ideas could never ſuppoſe the exiſtence of thoſe animated forms which occupy the immeaſurable ſpace between an apparent atom and nothing. The myriads of animals, thouſands of times ſmaller than a mite, muſt evade our cognizance, and be an actual conviction of their non-exiſtence.

But with all the utility that the microſcope can boaſt, no inſtrument is ſo likely to miſlead the moſt accurate obſerver, particularly if not in the habit of uſing it; the variations of light, the difference of the magnifying powers, or the damage the glaſſes may meet with by accident, ſuch as requires every one to examine with the greateſt care; one degree of light may bring an object to view, whilſt another may entirely blend it with the fluid it exiſts in; or one glaſs may diſcover ſpines on an object, another glaſs might have repreſented perfectly ſmooth; it is therefore neceſſary to begin with a ſmall power, in proportion to the ſize of the object, and to proceed to deeper magnifiers after.

There is ſome difference in our figure, and thoſe either of *Barbut*, or of *Baker*, which appears chiefly from our uſing a ſingle lens nearly of the deepeſt power convenient to uſe. Our glaſſes were the 20th and 30th of an inch focus.

We very attentively examined the eyes, and found, not one, but two, placed near each other, on a ſcale or plate of a black colour; hence ariſes the appearance of a ſingle eye by a ſmall magnifying power.

The tail preſents a forked appearance by a deep power, and the eggs are contained in two bags, one on each ſide the tail. The colour varies probably in proportion to the nature of its food, to pale green, more or leſs of a red, or of a grey brown colour.

FIG.

FIG. II.

This minute animalcula is frequent in ſtagnant water, or in infuſions of vegetables, and is one ſpecies of thoſe whoſe exiſtence can only be diſcovered by a good microſcope. It is very difficult, conſidering the power thoſe creatures have to diſtort their true form at pleaſure, to fix their diſtinguiſhing character: therefore where the definition appears dubious, we prefer being ſilent rather than hazard an error.

FIG. 2. Repreſents them (*magnified*) as they ſometimes ſeem to follow the leader in herds; but perhaps it is only the ſcent of the prey that induces each to follow the foremoſt, as they frequently ſwim or whirl in the water ſeparately, with great ſwiftneſs, devouring the ſmaller kinds of animalculæ.

FIG. 3. Two, magnified by a deep power, when they appear to have feet or fins.

FIG. 4. Shews the ſtrange form it aſſumes whilſt depoſiting its eggs.

FIG. 5. The eggs deeper magnified.

PLATE III.

PHALÆNA BUCEPHALA.

BUFF-TIP MOTH.

LEPIDOPTERA.

GENERIC CHARACTER.

Antennæ taper from the baſe. Wings in general deflected when at reſt. Fly by night.

SPECIFIC CHARACTER
AND
SYNONYMS

Anterior wings cinereous, with two ferruginous ſtreaks, and a large yellow ſpot at the end.

PHALENÆ BUCEPHALA: alis cinereis: ſtrigis duabus ferrugineis maculaque terminali magna flava. *Lin. Fn. Suec.* 1115.

The delicate aſſemblage of beautiful down which clothe the upper wings of the Buff-tip Moth is its chief recommendation; the hiſtory affords

affords but little for obſervation, it is hatched from the egg in *Auguſt*, and in *June* following the fly appears in the winged ſtate.

The Caterpillar is yellow varied with ſpecks, and ſpots of black, and orange, and is ſomewhat hairy: it feeds on the oak and aſh.

PLATE IV.

PHALÆNA GROSSULARIATA.

MAGPYE, or CURRANT-MOTH.

GENERIC CHARACTER.

The Antennæ ſetaceous. Wings in general deflected when at reſt. Fly by night.

SPECIFIC CHARACTER
AND
SYNONYMS.

Wings whitiſh, with round black ſpots, and a yellow ſtreak on the anterior pair.

PHALÆNA GROSSULARIATA: alis albidis: maculis rotundatis nigris, primaribus ſtrigis luteis. *Linn. Faun. Suec.* 1261.

The Magpye-Moth is one of the *geometræ*; and feeds on Gooſeberry and Currant-buſhes, as the name indicates. The Caterpillar is found in *May*; and in *July*, the Fly.

The Caterpillar, previous to its change to the Chryſalis ſtate, ſpins a web of a very ſlight and delicate texture, by which it is ſuſpended horizontally againſt the branches of trees, &c. as in our Plate repreſented.

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PLATE V.

FIG. I.

MONOCULUS CONCHACEUS.

APTERA:

GENERIC CHARACTER.

Legs from four to eight, formed for ſwimming, and very long: body covered by a ſhell divided into ſegments: Antennæ either four, two, or none; eyes one, or two, approximate and fixed in the ſhell: feelers four, and in continual motion when ſwimming: poſterior ones very ſmall and hooked.

SPECIFIC CHARACTER.

Shells ovate and downy.

To acquire a proper knowledge of the formation of this minute inſect, it is neceſſary to uſe a microſcope with a glaſs ſtage for objects, or rather ſuch as admit of nicely adjuſting a talc as occaſion may require: the inſect to be taken from the water with a camel-hair pencil, and carefully placed on the talc; after which it may be examined by a magnifier of $\frac{1}{10}$ of an inch focus; but in proceeding to a deeper power, let the talc be turned the upper ſurface with the inſect in the drop of the fluid from the lens, and thereby the lens may approach the object to its proper focus; without this caution the lens would be frequently immerged in the water, and entirely obſtruct the ſight.

In the adult ſtate, the opacity of the bivalve ſhell, its external covering, ſo entirely obſcures the internal motion, that nothing, except the filaments it throws from the aperture or opening, is viſible by the microſcope.

It

It breaks from the egg perfectly formed, but very minute and tranſparent; this is therefore the beſt time to diſcover its ſtructure, and from one in this ſtate we have taken our figure.

By the antennæ it directs its courſe, as does the *Monoculus Quadricornis*; and like it alſo it hath two eyes fixed in the ſhell, but it can completely envelope its head in its bivalve covering; its mouth is beneath, but the numerous filaments it darts forth, cauſes ſuch a violent motion in the water, that the minuter inſects are unreſiſtingly drawn between them, and forced to the mouth.

The motion of its lungs is very viſible, as are alſo the veſſe ramifſying thence. Its food is carried to, and digeſted in the deep-coloured tube, or inteſtine, and the refuſe is diſcharged by a ſudden jerk from the extremity of the tube, or anus.

Thus it exiſts, a life of rapine and deſtruction, enjoyed at the expence of the lives of thouſands; and as the objects of its ravenous diſpoſition are defenceleſs, ſo they are the ſport of their conqueror: the few moments of intermiſſion its craving appetite grants them, is occupied equally in the ſpoil, firſt preſſing them to death, and then toſſing them undevoured into the fluid.

But ſhould a more powerful inſect oppoſe him, he immediately contracts his parts, and nothing more than the external covering is open to his antagoniſt's violence, and he will ſooner die ignobly than offer the leaſt oppoſition.

FIG. II.

This animalcule is very minute, and appears like a fine membrane without inteſtines before the microſcope; from the appearance of its winged ſides, it is ſuppoſed to reſemble a bird. It is called *Burſaria Hirundinella*.

FIG. III.

The back and ſide view of an animalcule found in ditch-water on duck-weed, very pellucid, and ſingularly marked in the inteſtines; tail moveable, and thereby it directs its courſe.

PLATE VI.

SPHINX FILIPENDULÆ.

Six Spot Burnet Hawk-Moth.

Lepidoptera.

GENERIC CHARACTER.

Antennæ thickeſt in the middle. Tongue uſually exſerted. Palpi two, reflected. Wings when at reſt deflexed.

SPECIFIC CHARACTER.

Anterior wings cyaneous-green, with ſix red ſpots: poſterior wings red with a blue border.

Sphinx Filipendulæ: alis primoribus cyaneis: punctis ſex rubris, poſterioribus rubris: margine cyaneo. *Linn. Fn. Suec.* 1097.—*Gmel. Linn. Syſt. Nat.* 2390. *Sp.* 34.

Zygæna Filipendulæ: *Fabr. Ent. Syſt. T.* 3. *p.* 1. *p.* 386. *Sp.* 1. *Degeer. Inſ.* 7. *p.* 591. *n.* 1. *t.* 44. *f.* 1.

We have in England two ſpecies of the Sphinx tribe, (or Zygæna of Fabricius) that are known by the trivial appellation of *Burnets*, namely, the *five-ſpot Burnet*, and the *ſix-ſpot Burnet*. Theſe are not varieties, as they have been ſometimes conſidered; they are evidently diſtinct ſpecies, the former Zygæna Loti of Fabricius, the latter Sphinx Filipendulæ of Linnæus. There is a variety of Filipendulæ

found in ſome parts of the continent, in which the abdomen is marked with a ſingle rufous belt, but this kind has not, to our knowledge, been diſcovered in this country: Eſper gives it under the name of Sphinx Peucedani, Gmelin deems it nothing more than a variety of Filipendulæ β.

The ſix ſpot Burnet Sphinx is taken pretty frequently in the neighbourhood of London, where the other is rarely found. In ſome parts of Bedfordſhire the five-ſpot Burnet is very common.

As all lepidopterous inſects are liable to ſome trifling variations in the colours and markings of their wings from accidental circumſtances, ſo ſpecimens of Sphinx Filipendulæ have been taken with the two ſpots near the baſe very cloſely united; inſomuch as to appear like a ſingle ſpot, and hence aroſe ſome doubt as to the exiſtence of any other five ſpot Burnet. If, however, we compare this variety with the true five ſpot Burnet, a ſtriking difference muſt be perceived. The latter is ſmaller, the blue border of the inferior wings is deeper, and the ſpot of red, which in the ſix ſpot Burnet is ſituated neareſt to the apex of the ſuperior wing is wanting.

The larva of the preſent ſpecies feeds on the Geniſta Anglica, on the Ulex Europæus, and Spirea Filipendula, from the latter of which its Linnæan name is derived.

PLATE VII.

CHRYSIS IGNITA.

Common Golden Wasp.

Hymenoptera.

Wings four, generally membraneous. Tail of the females armed with a ſting.

GENERIC CHARACTER.

Mouth horny and advanced: jaw linear much longer than the lip, emarginate, and membranaceous at the tip: no tongue: Palpi four, projecting, unequal and filiform. Antennæ ſhort, filiform, of twelve joints, the firſt of which is longeſt. Body golden, ſhining, and gloſſy; abdomen arched beneath with a ſcale on each ſide: tail uſually dentated: ſting partly exſerted. Wings flat.

SPECIFIC CHARACTER

AND

SYNONYMS.

Glabrous, ſhining, thorax green, abdomen golden, with four teeth at the extremity.

Chrysis ignita: glabra nitida, thorace viridi abdomine aureo: apice quadridentato. *Fn. Suec.* 1665.—*Gmel. Linn. Syſt.* 2745. *ſp.* 1.

Exotic Infects, or at leaft thofe of the Eaft, or Weft Indies, for the effulgence and beauty of their colouring in general, claim a fuperiority over the natives of this climate; but the appearance of this Chryfis before the fpeculum of an opake microfcope, may vie with many of the moft favourite foreigners hitherto difcovered; the richnefs of changeable colours blending into each other, according to the variations of the light reflected on the furface, is fuch that we freely confefs our inability, or even the inability of art, to equal; though we truft our figure will give fome idea of the delightful appearance of the original.

The Fly of the natural fize is given on the foreground, the magnified figure above.

It commonly conftructs its habitation in the chinks of old walls, or decayed trees, but prefers a fituation near the entrance of woods, where it may refide in filent fecurity. If attacked by any Infect of equal fize, it is generally victorious, for fuch is the amazing ftrength of its almoft impenetrable coat, that it will encounter the fpider without much apprehenfion of danger; and as its ftrength protects it from many injuries which Infects with tender bodies are expofed to; the fpecies multiplies, and is not uncommon in feveral parts of the country. It rarely appears from its retreat until the middle of the day, and is then only invited by the piercing rays of the fun.

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PLATE VIII.

VORTICELLA LUNARIS.

GENERIC CHARACTER.

A worm capable of contracting or extending itſelf, naked, with rotatory cilia.

SPECIFIC CHARACTER.

Simple, hemiſpherical, with a twiſted pedicle.

" The ſmall head of this animalculum is crater-form, the margin " of the orifice protuberant, ciliated on both ſides, the hairs undula- " ting, the pedicle eight or ten times the length of the body. As " often as the mouth is opened, the pedicle extends itſelf; when it " is ſhut, this is twiſted up ſpirally, and their motions are often reite- " rated in a ſhort ſpace.

" FIG. 1. the head, expanded.——FIG. 2. when ſhut.——FIG. 3. " the undulated edge."

Müller. Ani. Inf.——Adams's Eſſays on the Microſcope.

FIG. 4. found in infuſions of hay, and is called *Trichoda Uvula.*

PLATE IX.

PHALÆNA PADELLA.

SMALL ERMINE MOTH.

LEPIDOPTERA.

GENERIC CHARACTER.

Antennæ taper from the baſe. Wings in general deflexed when at reſt.

SPECIFIC CHARACTER.

Tinea. Firſt wings lead colour, with about twenty black dots: ſecond ones brown.

PHALÆNA *(Tinea)* PADELLA: alis primoribus lividis: punctis 20 nigris poſterioribus fuſcis. *Linn. Fn. Suec.* 1364. —*Gmel. Linn. Syſt. Nat.* 2586. *Sp.* 351.

Phalæna Padella feeds on the white-thorn, black-thorn, and on fruit trees. In May the caterpillars are hatched, and as they live in ſocieties of hundreds, or even thouſands, by their united induſtry they ſpin a web ſpacious enough to contain the family, and therein they aſſume their ſeveral forms; early in June they become chryſalides, and in about fourteen days after that change the moths appear.

The caterpillars of the *Phalæna Padella* and *Evonymella* are almoſt ever found in the ſame ſociety, and many circumſtances have been advanced

advanced to prove them either varieties of each other, or different ſexes of the ſame ſpecies. Linnæus conſidered them as diſtinct kinds. They differ in colour in the larva ſtate, that of one being of a light yellow brown, and of the other dark brown inclining to black. The ſuperior wings of *Evonymella* are leſs of a lead colour than thoſe of T. *Padella*, and are marked with a greater number of black dots; the latter, according to Linnæus, ſhould have only twenty of theſe dots on the wings, the other fifty; but this character is liable to ſome little variation, as we have frequently had an opportunity of obſerving, in ſpecimens of both inſects. Phalæna (*Tinea*) Evonymella is given in another part of the work.

PLATE X.

PHALÆNA AURIFLUA.

YELLOW TAIL MOTH.

LEPIDOPTERA.

GENERIC CHARACTER.

Antennæ taper from the baſe: wings in general deflected when at reſt. Fly by night.

SPECIFIC CHARACTER AND SYNONYMS.

White; extremity of the abdomen yellow.

BOMBYX AURIFLUA: alis albis: primoribus ſubtus coſta fuſca ano barbato luteo. *Fabr. Mant. Inſ. 2. p.* 125. *n.* 145.

PHALÆNA (*Bombyx*) CHRYSORRHŒA. *Linn. Syſt. Nat.*

Linnæus confounded the Yellow Tail Moth, with another kind known among collectors of Engliſh Inſects by the name of the Brown Tail Moth; an inſect which it may be recollected appeared in ſuch prodigious numbers in the year 1780, as to ſpread the utmoſt conſternation throughout the vicinity of the Metropolis; the credulous believing them to be the certain prelude of a famine:—The larvæ of

this laſt mentioned inſect were collected during that period, at the expenſe of the reſpective pariſhes where they appeared moſt numerous, and were publicly burnt by order of the magiſtrates.—The Yellow Tail Moth is allied in ſome degree to the Brown Tail Moth, though evidently diſtinct.

The Yellow Tail Moth is found in the month of July, feeding on the white-thorn, ſallow, apple, and ſome other fruit trees. About the latter end of the ſame month, it ſpins a web of tough texture againſt the branches of trees, in which it changes to the pupa ſtate, and the Fly comes forth in Auguſt.

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PLATE XI.

ACARUS COLEOPTRATORUM.

BEETLE-TICK.

APTERA.

No wings.

GENERIC CHARACTER.

Legs eight. Eyes two, lateral. Tentacula two, jointed.

SPECIFIC CHARACTER.

Tawny. Anus whitiſh.

Syſt. Ent. 814. 24. *Linn. Syſt. Nat.* 2. 1026. 27. *Fn. Sv.* 1973.

This Tick is one of thoſe deteſtable race of animals whoſe minuteneſs ſecures it from danger, while it draws nutriment from the blood, and frequently from the vitals of larger inſects. Every animal is tormented by thoſe cruel and blood-thirſty beings, varying in ſize, in ſhape, and in colour, but whether they be diſtinguiſhed by the name of lice, bugs, fleas, or mites, they fall under one point of view, when conſidered as a peſt to the ſocieties of other animals. In a ſcientific arrangement they muſt of courſe be regarded as generically different.

Beetles are in general infeſted and ſeverely injured by thoſe vermin. I found about a month ſince one of the *Scarabæus Stercorarius*, *Com-*

mon Dor, or *Clock*, almoſt devoured alive by them, little except his ſhell remaining; yet, in this ſtate, it lived ſeveral days. There were a number of ſmall brown bags affixed by pedicles to its breaſt, thighs, and even feet; the microſcope diſcovered thoſe to contain each an embryo, and the pedicle, ſeemed to anſwer the part of an umbilical chord, to extract nouriſhment from the living creature. I perceived on further inſpection their baſe penetrated the ſhell, or entered the apertures.

FIG. 1. Natural ſize of the Ticket and Embryo.
FIG. 2. The upper ſide, and Fig. 3. under ſide, magnified.

GRADUAL, from theſe what numerous kinds deſcend,
Evading even the microſcopic eye!
All Nature ſwarms with life; one wond'rous maſs
Of Animals or Atoms organized,
Waiting the vital breath, when I'PARENT HEAVEN
Shall bid his Spirit blow. —— —— —— ——
—— —— —— —— —— —— —— ——
—— —— —— —— Theſe, conceal'd
By the kind art of forming HEAVEN, eſcape
The groſſer eye of man: for, if the worlds
In worlds inclos'd, ſhould on his ſenſes burſt,
From cates ambroſial, and the nectar'd bowl
He would abhorrent turn: and in dead night
When ſilence ſleeps o'er all, be ſtunn'd with noiſe.

THOMSON'S SEASONS

PLATE

PLATE XII.

CICINDELA CAMPESTRIS.

SPARKLER.

GENERIC CHARACTER.

Antennæ ſetaceous. Palpi fix, filiform; jaws prominent, with many teeth. Eyes prominent. Thorax roundiſh, and margined.

SPECIFIC CHARACTER.

Green: five white ſpots on the wing-caſes.

CICINDELA CAMPESTRIS: viridis, elytris punctis quinque albis. *Linn. Fn. Suec.* 746.—*Gmel. Syſt. Nat.* 1920. *Sp.* 1.

Thoſe beautiful Inſects vary ſomething in ſize and colour, the ſpots on the elytra are generally white, but are often found with ſpots of yellow; they fly or run quick, are carnivorous, and live in dry ſandy places. In the ſpring its larva is found, which reſembles a long, ſoft, whitiſh worm, with ſix legs and a brown ſcaly head; it perforates the ſand perpendicularly, and reſts near the ſurface to enſnare ſmaller inſects.

It is very difficult, if at all poſſible, to breed thoſe inſects and obſerve their metamorphoſes; we have tried various methods, but have not yet been ſo fortunate as to ſucceed.

PLATE XIII.

LUCANUS CERVUS.

Stag Beetle.

Coleoptera.

GENERIC CHARACTER.

Antennæ clavated, compreſſed, pectinato-fiſſile. Maxillæ extended ſo as to reſemble horns. Five joints in each foot.

SPECIFIC CHARACTER.

Head and Thorax black. Shells dark brown. Horns reſembling thoſe of a ſtag, forked at the end, a ſmall branch near the middle on the inſide, moveable. Shells plain.

The Stag-Beetle is the largeſt coleopterous inſect we poſſeſs, but its ſize is inſignificant, when compared with thoſe of the ſame kind that inhabit hot countries or woodlands, as inſtanced in the *Scarabæus Hercules*, &c.

It is ſufficiently diſtinguiſhed in this country by the moveable maxillæ, or jaws, that project from the head; they are of a dark red colour, and though brighter in ſome ſpecimens, are rarely of the beautiful coral appearance *Barbut* and other authors have deſcribed.

Coleopterous inſects in general are endowed with amazing ſtrength, and their arms are equally ſerviceable for the aſſault or defence. The antlers of this Beetle are carefully to be avoided by ſuch as attempt to deprive it of liberty; with them it ſtrips off the bark of oak trees, and attaches itſelf firmly to the trunk, thence extracting the liquor that oozes with its tongue.

They are plentiful in June and July, in Kent and Eſſex, and in many other parts of Britain.

The females are known by their maxillæ being much ſhorter than thoſe of the males; they depoſit their eggs under the bark of old trees, either oak or aſh, and the food of the larvæ, or grubs, is the internal ſubſtance of the trunk, firſt reduced to a fine powder; they undergo transformation in this cell, and force a paſſage through the bark when perfect beetles.

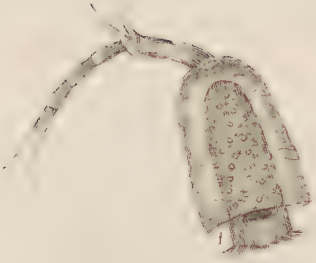

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PLATE XIV.

TRICHODA POCILLUM.

TRICHODA.

An inviſible, pellucid, hairy worm.

SPECIFIC CHARACTER.

Oblong trichoda, the fore-part truncated and hairy, the tail articulated, and divided into two briſtles.

This inviſible animalculum is common in marſhy places, particularly in the ſwamps near the banks of the river Thames.

When magnified, the body is pellucid, and appears like two ſeparate bodies, one encloſing the other; the interior part is filled with molecules, and the exterior is membranaceous: they are capable of extenſion or dilation, and of folding in various directions. At the extremity of the interior part is a muſcular orbicular membrane, which is opened or ſhut at pleaſure, and forms the mouth.

FIG. 1. The interior part protruded with the mouth open.

FIG. 2. The jaws ſhut.

PLATE XV.

PHALÆNA CAJA.

GREAT TYGER MOTH.

LEPIDOPTERA.

GENERIC CHARACTER.

Antennæ taper from the baſe: wings in general deflected when at reſt. Fly by night.

SPECIFIC CHARACTER

AND

SYNONYMS.

Wings fuſcous, interſected with rivulets of white: poſterior pair red with black ſpots.

PHALÆNA CAJA: alis fuſcis: rivulis albis, poſteris purpureis nigro punctatis. *Linn. Fn. Suec.* 1. *p.* 820. 2. *n.* 1131.
Fabr. Sp. Inſ. 2. *p.* 198. *n.* 122.
Gmel. T. 1. *p.* 5. 2410. *ſp.* 38.

The ſuperior wings in ſome examples of this ſpecies are marked with ſpots of brown, much ſmaller in ſize than thoſe depicted in the preſent inſect: the ſpots in others are alſo occaſionally larger, and vary in being more or leſs confluent or united; the rivulet interſecting waves

waves of white or cream colour are more or leſs conſpicuous in different ſpecimens. The lower wings admit likewiſe of material variation in the number as well as magnitude of the black ſpots; in having more or leſs of the blue ſubocellated ſpace in the center; or in being encircled by a narrow yellow border, an appearance it ſometimes, though rather rarely, exhibits.

The Caterpillar is often found in gardens, and feeds on the lettuce, nettle, &c. When apprehenſive of danger it rolls itſelf up like a hedgehog. In May it becomes a pupa, and the latter end of June or early in July the Moth is produced.

PLATE XVI.

PHALÆNA ANTIQUA.

WHITE SPOT TUSSOCK MOTH,
OR
VAPOURER.

LEPIDOPTERA.

GENERIC CHARACTER.

Antennæ taper from the baſe: wings in general deflected when at reſt. Fly by night.

SPECIFIC CHARACTER
AND
SYNONYMS.

Anterior wings ferruginous, with a white lunule at the poſterior angle: female apterous.

PHALÆNA ANTIQUA: alis primoribus ferrugineis: lunula alba anguli poſterioris: femina aptera. *Linn. Fn. Suec.* 1120. *Gmel. Linn. Syſt. Nat. T.* 1. *p.* 5. 2439. 56.

The female Vapourer Moth appears at firſt ſight to reſemble an apterous inſect; but on inſpection will be found to exhibit a pair of wings of very minute ſize at the baſe of the thorax; and beſides this, the antennæ are alone ſufficiently characteriſtic to determine it an inſect of the Phalæna tribe. It creeps in a ſluggiſh manner, and lays an abundance of eggs.

FIG. 1. The female.

FIG. 2. The male.

The

The Caterpillars feed on white thorn, and on fruit trees in general. They have been known to live on the deadly night-ſhade, and other poiſonous plants. The ſpecies is found in the Caterpillar ſtate in July, and the Moth in September.

PLATE XVII.

FIG. I. II.

VORTICELLA URCEOLARIS.

GENERIC CHARACTER.

A ſmall animal, with a vaſcular cup; the mouth is at one end, ciliated, and capable of being contracted; the ſtem fixed.

SPECIFIC CHARACTER.

Single, with a ſhort tail, and toothed mouth.

This Animalcum is barely perceptible to the naked eye, appearing like a ſmall white ſpeck; the microſcope diſcovers the external covering to be ſo tranſparent, that all the motions of the animal within are perfectly diſtinct. It has a double rotatory inſtrument, which, however, it can conceal or ſhew at pleaſure; and it has power to protrude the head and tail as at FIG. 1. or to contract them within the external coat or covering, as at FIG. 2.—When the animal intends to diſplay its rotatory inſtrument, it forces its tail through the hole at the extremity of the outer coat, and affixes it to whatever ſubſtance is near; but when it ſwims, it moves its tail backwards and forwards to aſſiſt it.

This ſpecies is found in river, and ſtagnant water.

PLATE XVII.

FIG. III.

TRICHODA VERMICULARIS.

GENERIC CHARACTER.

An inviſible, pellucid, hairy worm.

SPECIFIC CHARACTER.

Long cylindrical trichoda, with a ſhort neck, the apex hairy.

Is found in river water, and can aſſume various forms, as ſhewn in our figures.

PLATE XVIII.

NEPA CINEREA.

Common Water Scorpion.

Hemiptera.

GENERIC CHARACTER.

Beak inflected: antennæ ſhort: wings four, folded croſswiſe, coriaceous on the anterior part: fore legs cheliform, the other four formed for walking.

SPECIFIC CHARACTER

AND

SYNONYMS.

Cinereous: thorax unequal: body oblong, ovate, terminating in two long briſtles.

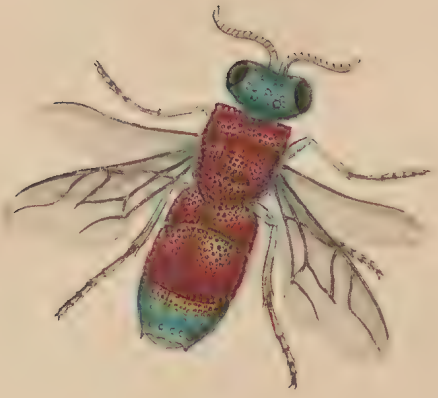
Nepa Cinerea: cinerea, thorace inæquali, corpore oblongo ovato. *Linn. Fn. Suec.* 906.
Nepa Cinerea: cauda biſeta, corpore ovato. *Fabr. ſp. Inſ.* 2. *p.* 333. *n.* 5.
Nepa Scorpio aquaticus. *Degeer. Inſ.* 3. *p.* 361. *n.* 1. *t.* 18. *f.* 1.
Scorpio paluſtris. *Mouff. Inſ.* 321.
Scorpio paluſtris ad cimices referenda. *Raj. Inſ.* 58.
Araneus aquaticus. *Bauh. Ballon.* 212. *f.* 2.

There are three ſpecies only of this genus common to our waters, of which this is the moſt frequent. Its ſize is much inferior to ſome ſpecies that occur in watery places in hot countries, one of which in particular

particular exceeds in ſize even our Sphinx Atropos; this is Nepa Grandis, a native of Surinam, and India. Beſides this there are two or more other ſpecies, little inferior in magnitude, with which the waters of the tropical climates abound. Nepa Cinerea ranks among the largeſt of the European ſpecies of this tribe.

This Inſect ſinks its eggs into the cavity of a ruſh or other aquatic plant: in this ſituation they hatch and crawl out. The perfect inſects are found in June, and from thence to September, or later; they are voracious, and feed on other aquatic animals, graſping their prey between their fore feet, and tearing them to pieces with their ſharp roſtrum.—They fly in the evening, and thus remove in herds from one pool to another in times of drought, or when threatened with danger.

The antennæ are ſo unuſually diminutive, and differently conſtructed from thoſe of inſects in common, that it was formerly ſuppoſed the Nepæ muſt be deſtitute of theſe organs; and that the cheliform or anterior pair of legs anſwered the ſame purpoſe in this remarkable genus, as the true antennæ in other tribes of inſects. It is now aſcertained they have antennæ, and therefore do not require the aſſiſtance of the inferior feet in lieu of them.



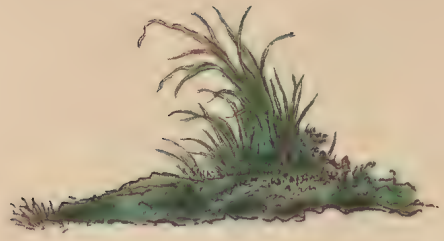


PLATE XIX.

CHRYSIS BIDENTATA.

HYMENOPTERA.

GENERIC CHARACTER.

Thorax joined to the abdomen by a ſhort pedicle. Abdomen divided into three ſegments. Sting ſimple. Wings not folded. Antennæ filiform of one long and eleven ſhort joints each.

SPECIFIC CHARACTER.

Head and laſt ſegment of the body, ſky blue, changeable. Thorax, and two firſt annulations of the abdomen, crimſon with gold ſpots. Thorax with two teeth.

The Chryſis Bidentata is ſcarcely ſo large, and by no means ſo common as the Chryſis Ignita, (not exceeding one-third of an inch in length) but is equal, if not ſuperior in beauty and richneſs of colour. The head, but more particularly the laſt ſegment of the body, appears in one direction of light, blue, in another green, in another purple, &c. and the thorax, and two firſt ſegments of the abdomen are far more enriched with a golden appearance; the ground colour is deep crimſon, but the metallic appearance on the lighter parts, and the number of ſmall gold ſpots which beſprinkle it, greatly diminiſh the ſtrength of colour, and renders it, even before it is magnified, a ſuperb little inſect.

It is found in May or June in ſome parts of Kent and Eſſex.

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PLATE XX.

FIG. I.

PHALÆNA CHRISTIERNANA.

LEPIDOPTERA.

GENERIC CHARACTER.

Pyralis.

SPECIFIC CHARACTER.

First wings yellow, with roſe-coloured marks. Under wings floſſy, browniſh grey.

The natural hiſtory of this Phalæna is ſo little known, that we freely confeſs our inability to ſhew its transformations; and although a deviation from our firſt intention, we truſt the ſcarcity of the Fly will plead our excuſe. We ſhall occaſionally introduce figures of ſome rare and non-deſcript ſubjects, which we hope will be highly ſatisfactory to many of our ſubſcribers.

Our ſpecimen was taken at Feverſham; they are ſometimes met with about Darnwood in June or July.

FIG.

PLATE XX.

FIG. II.

HIMANTOPUS LUDIO.

GENERIC CHARACTER.

A pellucid, inviſible, cirrated worm.

SPECIFIC CHARACTER.

Curled Himantopus; the upper part hairy, the tail extended upwards.

PLATE XXI.

PHALÆNA PRUNARIA.

ORANGE MOTH.

LEPIDOPTERA.

GENERIC CHARACTER.

Geometræ. Antennæ feathered.

SPECIFIC CHARACTER.

Wings orange, ſprinkled with brown, and a ſemi-lunar ſpot on the firſt pair. Female paler than the male. Caterpillar yellow brown, with two ſpines before and two behind.

The caterpillars of this Moth feed on fruit-trees, or on thorns, in the month of May; the Chryſalis is commonly found, rolled up in a decayed leaf, inwardly protected by the web, in June; and in July the Moth.

The preſent figure is of the male,

PLATE XXII.

TIPULA PLUMOSA.

SEA TIPULA.

DIPTERA.

GENERIC CHARACTER.

Head long. Palpi four, curved. Trunk very ſhort.

SPECIFIC CHARACTER.

Brown. Thorax greeniſh. Eyes black. Fore legs longeſt. Wings ſhorter than the abdomen.

Is found in the month of April near marſhes, and has been frequently miſtaken for the common Gnat.

PLATE XXIII.

SILPHA VESPILLO.

COLEOPTERA.

GENERIC CHARACTER.

Antennæ clavated, foliated. Head prominent. Thorax margined.

SPECIFIC CHARACTER.

Margin of the thorax broad. Shells abbreviated, black, with two orange belts. Thigh of the hind legs large, with a ſpine near their origin; length one inch.

This ſpecies, like moſt of the Coleopterous Inſects, delights in filth and putreſcence, and are rarely found except in the dung, or dead bodies of larger animals, whoſe entrails they devour; they prey on the larvæ of ſmaller inſects beneath the ſurface of the earth, or they will deſtroy each other. Their Grubs are ſecreted in perforations made in the earth by the female, and therein they change to their laſt or perfect ſtate in June or July: thoſe Grubs are to be found by following the track of a plough.

They fly well with the tranſparent wings, which are concealed beneath the Elytra or upper Shells. The male is rather ſmaller than the female, and the orange belts are of a deeper hue: though both male and female vary in the ſtrength of colour when alive, and yet more when preſerved in cabinets, as they ſometimes become almoſt brown. All inſects are ſubject to this change, whatever may be the care of the collector.

PLATE XXIV.

LIBELLULA DEPRESSA.

Dragon Fly.

Neuroptera.

Wings four, naked, tranſparent, reticulated with veins or nerves. Tail without a ſting.

GENERIC CHARACTER.

Mouth with two long lateral jaws. Antennæ very ſhort. Tail of the male forked. Wings extended.

SPECIFIC CHARACTER.

Eyes brown. Thorax greeniſh, with two yellow tranſverſe bands. A large black ſpot at the baſe of each Wing, and a ſmall dark mark on their exterior margin. Body depreſſed, lance-ſhaped.

All the ſpecies of Libellula, but particularly the larger kinds, are conſidered by many rather as objects of terror, than ſubjects worthy inſpection; and the vulgar denomination of *Horſe-ſtinger*, contributes to this abhorrence: although it hath no power over animals of ſuch magnitude, it is perfectly a Vulture among lepidopterous, or other defenceleſs Inſects, deſtroying more for its ſport than for its voracious appetite.

The Fly is on the wing in May, and June, in almoſt every marſhy ſituation; the female lays her eggs near the roots of Oſiers on the banks of ditches, or ſinks them into the ſtalks of Ruſhes in the water; they hatch, and an ugly apterous inſect, of a brown colour, comes forth;

forth; it hath a long body like the Fly, ſix Legs, and a forked Head, a ſharp ſpine at the extremity of the abdomen, and a row of ſpines on each ſide, one at every joint; it plunges into the water, and immediately devours ſuch of the inhabitants, or their eggs, as comes within its reach, and it continues this life of depredation until its next change. They are to be taken with a ſmall hand-net.

All tranſparent objects, in a certain direction before a microſcope, reflect the colours of the priſm. The *Tipula Plumoſa* exhibits, in this ſituation, an effulgence of colouring, which its natural ſize conveys but ſmall veſtiges of; and the colours on the wing of this Libellula appears far more vivid when magnified.

The body of the male is bluiſh grey; the preſent ſpecimen is the female.

PLATE XXV.

SPHINX API-FORMIS.

Bee Hornet Sphinx.

GENERIC CHARACTER.

Antennæ thickeſt in the middle. Wings, when at reſt, deflexed.

SPECIFIC CHARACTER.

Wings tranſparent, with brown veins. Abdomen yellow, the firſt and fourth diviſion from the thorax dark, purpliſh. Thorax brown, with two yellow patches in front. Head yellow. Antennæ dark brown. *Linn. Syſt. Nat.*

The Caterpillar of the *Sphinx Api-formis* is an internal feeder, and found only by making an inciſion into the innermoſt ſubſtance of the Poplar, the only tree the female commonly depoſits her Eggs on; it is to us unknown, as is alſo the time of continuing within the trunk of the tree; but in June, early in the morning, or in the evening, the Chryſalis is ſeen iſſuing through the bark, from a perforation in the trunk, which the Caterpillar had formed previous to its change, generally to the depth of ſix or eight inches, or more. Nature has furniſhed every ſegment of the Chryſalis with a double row of ſharp teeth, or ſpines, therewith it firmly attaches itſelf to the ſides of the cavity, and, by repeated exertions to break from its priſon, gradually comes forth; thus, when it hath extricated itſelf from the tree, and the Chryſalis is ſupported as in our Plate repreſented, the upper parts burſt aſunder with violence, and the inſect ruſhes forth to enjoy "the temperature of the ſummer ſeaſon." It is rarely found except in Eſſex.

There is another *Sphinx*, which differs in ſo few particulars, that it hath been miſtaken for the preſent ſubject; notwithſtanding, it may be eaſily diſtinguiſhed by a creſcent of yellow in the fore part of the thorax, and thence entitled the *Lunar Hornet Sphinx*; a Drawing of which Inſect, with the larva, has been preſented to the *Linnæan Society*. This larva is nearly the ſize of the Buff-tip Caterpillar, and of an obſcure brown colour; probably the larva of the *Sp. Api-formis* may much reſemble it.

It is arranged in many cabinets under the title of *Sphinx Veſpiformis*; but the *Sp. Veſpiformis*, in the *Linnæan Collection*, now in the poſſeſſion of Dr. *Smith*, ſcarcely exceeds half the ſize of this ſubject, and is probably unique. The *Lunar Hornet-Sphinx* had no place in that cabinet.

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PLATE XXVI.

FIG. I.

TRICHODA COMETA.

GENERIC CHARACTER.

An inviſible, pellucid, hairy Worm.

SPECIFIC CHARACTER.

Spherical, the fore part hairy, with an appendant globule.

FIG. II.

TRICHODA LONGICAUDA.

SPECIFIC CHARACTER.

Cylindrical, the firſt part truncated, and ſet with hairs. The tail long, with two joints, and terminated by two briſtles.

FIG. III.

VORTICELLA TROCHIFORMIS NIGRA.

GENERIC CHARACTER.

A Worm, capable of contracting or extending itſelf, naked, with rotatory cilia.

SPECIFIC CHARACTER.

Top-ſhaped black vorticella.

This ſpecies of Vorticella appears, without the aſſiſtance of a microſcope, as ſmall black ſpecks, ſwimming on the water, particularly in meadows which are inundated. They are conſtantly in motion; and two ſmall white hooks are perceptible by glaſſes at 1—1; by the help of thoſe it is ſuppoſed to ſwim, or they may incloſe ſome rotatory organ. The inſect is opaque.

PLATE XXVII.

LEPTURA ARIETIS.

Common Wasp Beetle.

Coleoptera.

GENERIC CHARACTER.

Antennæ tapering to the end. Shells narrower at the apex. Thorax ſomewhat cylindrical.

SPECIFIC CHARACTER.

Black. Anterior and poſterior margin of the Corſlet yellow. Four yellow lines on each elytra or Shell. *Lin. Syſt. Nat.*

They fly well, and are ſometimes found on aquatic plants. They are exceedingly numerous in Kent, in the peaſe and bean-fields, in May, or on the currant-buſhes, and not unfrequently are taken on the fern.

PLATE XXVIII.

CHRYSOMELA ASPARAGI.

COLEOPTERA.

GENERIC CHARACTER.

Antennæ moniliform: feelers ſix: antennæ becoming larger towards the extremity: thorax marginate: wing-caſes immarginate: body generally oval.

SPECIFIC CHARACTER.

AND

SYNONYMS.

Thorax red, with two black dots: wing-caſes yellow, with a croſs and four dots of black.

CHRYSOMELA ASPARAGI. *Linn. Syſt. Nat.* 2601. 112.—*Fn. Suec.* 567.

CHRYSOMELA ASPARAGI: thorace rubro: punctis duobus nigris coleopteris flavis: cruce punctiſque quatuor nigris. *Geoff. Inſ.* 1. 241. 3.

This pretty oleopterous inſect is found on the aſparagus when in ſeed. Linnæus calls it Aſparagi in reference to its food. The ſpecies is common.

Chryſomela Aſparagi forms a beautiful opake object for the microſcope: its natural ſize is given at FIG. 1. and the magnified appearance in the upper part of the plate.

PLATE

1

3

2

PLATE XXIX.

FIG. I.

TRICHODA MELITEA.

GENERIC CHARACTER.

An inviſible, pellucid, hairy worm.

SPECIFIC CHARACTER.

Oblong ciliated trichoda, with a dilatable neck, the apex globular, and ſurrounded with hairs. *Müller's Animalcula Infuſoria*, &c.

Obſervable only with the aſſiſtance of the microſcope, and rarely found except in ſalt waters, although we have met with one ſpecimen in the water of the Thames.

FIG. II.

VORTICELLA NASUTA.

GENERIC CHARACTER.

A Worm, capable of contracting or extending itſelf, naked, with rotatory cilia.

SPECIFIC CHARACTER.

Cylindrical, with a prominent point in the middle of the cup. *Müller's Anim. Infuſ.*

Not larger than the preceding, but appears of an unequal ſize before the microſcope, is pellucid, with the fore part truncated and ciliated, and moves in the water with great alertneſs, by the aſſiſtance of the circle of hairs which encompaſſes the body.

FIG. III.

VORTICELLA VIRIDIS.

GENERIC CHARACTER.

A Worm, capable of contracting or extending itſelf, naked, with rotatory cilia.

SPECIFIC CHARACTER.

Cylindrical uniform, green, and opake. *Müller's Anim. Infuſ.*

To the naked eye this ſpecies appears a mere point: when magnified it is of a dark green colour, almoſt opake, nearly cylindrical, obtuſe at the extremities, and deſtitute of limbs. It moves circularly, or in a ſtrait direction, and cauſes ſuch an agitation of the water, that notwithſtanding its appearance, ſome rotatory inſtrument muſt be concealed within the body which the inſect can put forth at pleaſure.

PLATE XXX.

PHALÆNA SALICIS.

White Satin Moth.

GENERIC CHARACTER.

Antennæ taper from the base: wings in general deflected when at reſt. Fly by night.

SPECIFIC CHARACTER

AND

SYNONYMS.

Wings white: legs black with white rings.

Phalæna Salicis: alis albis, pedibus nigris albo annulatis.
Linn. Fn. Suec. 1. *p.* 822. 2. *n.* 1129.
Fabr. Spec. Inſ. 2. *p.* 193. *n.* 103.
Gmel. Linn. Syſt. Nat. T. 1. *p.* 5. 2423. *n.* 46.

Very abundant on the willow, ozier, and poplar, in the vicinity of London. There are two or more broods of this inſect in the year, ſo that it is often found during the ſummer ſeaſon in the larva, pupa, and winged ſtate at the ſame time. It moſt commonly occurs in the larva form in May, changes to the pupa in June, and appears in the fly ſtate in July.

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2
3

PLATE XXXI.

FIG. I.

MUSCA CHAMÆLEON.

DIPTERA.

Two Wings.

GENERIC CHARACTER.

Muſca, a ſoft flexible Trunk with lateral Lips at the end. No palpi.

SPECIFIC CHARACTER.

Dark brown or black. Antennæ taper, broken. Eyes large. Abdomen nearly circular, with three triangular yellow ſpots on each Side, and one at the extremity.

Linnæus, in a former edition of the *Fauna Suecica* gave this inſect the name of *Oeſtrus Aquæ*, but he afterwards diſcovered it to be a Muſca, and called it Muſca Chamæleon. It is one of the moſt common Dipterous, or two-winged Inſects we have; yet though ſo well known in its perfect ſtate, few have attended ſo minutely to its changes as to diſcover that; they form the moſt ſingular part of its hiſtory.—The female depoſits her eggs in the hollow ſtalks of aquatic plants, or broken reeds, or ſo provides for them that they cannot, but by ſome unforeſeen accident, be carried away. The egg, in due time ripening, produces a Larva, no way reſembling the Parent, but rather a Worm

of a moſt ſingular ſtructure. This happens about the latter end of *May*, or beginning of *June*, if the weather proves favourable; they will then be found in ſhallow ſtanding waters, crawling on the graſs or plants which grow there, or they may be taken floating on the ſurface of the water. The Body conſiſts of twelve annular diviſions, whereof the Head and Tail are two; the Tail has a verge of hairs, which, when entirely expanded, ſupport the creature on the ſurface, with its head downwards. If it wiſhes to deſcend, it contracts the hairs in the form of a wine glaſs, or entirely cloſes them at the end; and when again it is riſing to the ſurface, it forces a bubble from a ſmall aperture in the center, which immediately makes a paſſage for its aſcenſion.—It changes to the Pupa ſtate, and about the middle of *July* to the Fly. It ſubſiſts at this time on the nectar and other juices it extracts from the bottom of the corolla in flowers.

FIG.

FIG. II.

MUSCA PENDULA.

DIPTERA.

MUSCA.

SPECIFIC CHARACTER.

Head black. Thorax yellow, with three longitudinal black lines. Abdomen yellow, with tranſverſe black marks.

Its habits nearly correſpond with thoſe of the *Muſca Chamæleon.* Like that Inſect it once wore the appearance of an Aquatic, and like it alſo in its laſt or perfect ſtate, exiſts by extracting with its Trunk the nectar from flowers. It is to be taken in *June.*

FIG. III.

MUSCA LATERALIS.

DIPTERA.

MUSCA.

SPECIFIC CHARACTER.

* Thorax black. Abdomen bright red or brown, with a line of black from the Thorax; the laſt ſegment black, with hairs or ſpines.

Viſits flower gardens in the month of *June.*

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4
3
1

PLATE XXXII.

FIG. I.

VIBRIO OLOR.

GENERIC CHARACTER.

An invisible Worm, very simple, round, and rather long.

SPECIFIC CHARACTER.

Elliptical, with a very long Neck, and a knob on the Apex.—*Müller's Ani. Inf.*

The Neck of this Creature is in continual motion, and the whole Body is dilatable. It is found in water, replete with decayed vegetables.

FIG. II.

KOLPODA MILEAGRIS.

GENERIC CHARACTER.

An invisible, very simple, pellucid, flat, crooked Worm.

SPECIFIC CHARACTER.

Changeable, with the fore part like a hook, the hind part folded up.——*Müller' Ani. Inf.*

FIG.

PLATE XXXII.

FIG. III. and FIG. IV.

PROTEUS TENAX.

GENERIC CHARACTER.

An inviſible, very ſimple, pellucid Worm, of a variable form.

SPECIFIC CHARACTER.

Running out into a fine point.—*Müller.*

A gelatinous pellucid body, ſtored with black molecules; it changes its form in a regular order, firſt extending itſelf out in a ſtrait line, the lower part terminating in an acute bright point, without any inteſtines, and the globules being all collected in the upper part, it next draws the pointed end up towards the middle of the body, ſwelling it into a round form. The contraction goes on for ſome time, after which the lower part is ſwelled as in Fig. IV. The point is afterwards projected from this ventricoſe part. It paſſes through five different forms before it arrives at that repreſented at Fig. IV. It ſcarcely moves from one ſpot, only bending about ſideways. It is to be found in river water, where the *Nitida* grows.—*Adams on the Microſcope.*

1

2

PLATE XXXIII.

FIG. I.

PHALÆNA BATIS.

PEACH-BLOSSOM MOTH.

LEPIDOPTERA.

PHALÆNA.

GENERIC CHARACTER.

Antennæ taper from their apex. Wings in general contracted when at reſt. Fly by night.

*NOCTUA.

SPECIFIC CHARACTER.

Firſt pair of Wings brown, with five peach-coloured ſpots on each. Second pair light brown.

The Peach-bloſſom Moth at firſt ſight ſo evidently diſtinguiſhes itſelf, that it can ſcarcely be miſtaken. The upper or firſt pair of Wings have the ground of a brown colour, which in ſome directions of light aſſume a golden appearance; and on each Wing are five elegantly diſpoſed ſpots of white, having each a center of the moſt beautiful bloom, or bloſſom colour, which blend into the white with the moſt exquiſite ſoftneſs. The under Wings are of a ſimple colour, and have only a tranſverſe ſhade of a darker hue acroſs the middle of each Wing.

Its truly elegant appearance would alone be ſufficient to claim our attention; but when we add that it is one of the rareſt and moſt

valuable ſpecimens of Britiſh entomology, it will be conſidered as a compenſation for thoſe more common ſubjects occaſionally introduced, and which the nature of our plan cannot permit us to refuſe.

Our endeavours to procure the Caterpillar have hitherto been ineffectual, although it is very probably to be taken early in the ſeaſon, feeding on the bramble. It is deſcribed to be a brown larva, naked, or without hairs, with a gibboſity or riſing on the back, near the extremity.

Our Fly was taken in Eſſex, July 14th.

FIG. II.

PHALÆNA AMATORIO.

BLOOD VEIN, or BUFF ARGOS MOTH.

LEPIDOPTERA.

PHALÆNA.

** Antennæ feathered.

SPECIFIC CHARACTER.

Wings angulated, buff, ſprinkled with brown, and a red tranſverſe line acroſs each. Margin of each Wing edged with red.

The Caterpillars of this Phalæna feed on the oak leaves. They are green, with yellow rings. The Fly is found in Eſſex very commonly in the month of July.

PLATE XXXIV.

FIG. I.

CURCULIO BACHUS.

COLEOPTERA.

Wings two, covered by two ſhells, divided by a longitudinal ſuture.

GENERIC CHARACTER.

Antennæ clavated, elbowed in the middle, and fixed in the Snout, which is prominent and horny. Joints four to each foot.

SPECIFIC CHARACTER.

Shells, and Thorax purple with gold ſhades; ſnout long, black. *Linn. Syſt. Nat.* 2. 611. 38. *Sckæff. Icon. Tab.* 37. *Fig.* 13. *Geoff. Inſ.* 1. 270. 4. *Sul. Hiſt. Inſ. Tab.* 4. *Fig.* 4.

Our figure repreſents the *Curculio Bachus*, as it appears before the Speculum of an Opake *Microſcope with a lens magnifying* times.

It is with this, as with many other ſpecies of inſects, and particularly thoſe of the Coleopterous Order, that unleſs they are in ſome meaſure magnified, much of their beauty will remain hidden, and much of their ſtructure be enveloped in obſcurity. It is not perfectly agreeable to our plan, and may admit of ſome blame from our ſubſcribers; but when objects ſo diminutive in ſize, and ſo complex in colour, offer to our attention, and it is not poſſible to repreſent them in their natural appearance, or in a manner ſatisfactory to ourſelves, we muſt have recourſe to the Microſcope for aſſiſtance. We conſider the confidence at preſent repoſed in our accuracy, and attention, to the natural ſubjects, evident from the general patronage beſtowed on our attempt; it is a ſpur to our exertions, and we will endeavour, as well by our future, as preſent correctneſs, to deſerve a continuation of

 that

that eſteem, and encouragement, ſo liberally ſhowered on our once arduous undertaking.

C. Bachus is near in length, the Shells and Thorax appear of a deep gloſſy purple, with much inclination to gold; a green and golden hue is ſeen on every part of the body as it moves in various directions of light. The whole appears before the microſcope beſprinkled, and ſpotted with gold and purple; gold in thoſe parts where the light is moſt powerful, and purple in the ſhadows. The Snout is black, or of a dark colour, as are alſo the Eyes; and the ſingular ſtructure of the jointed Antennæ, which are thereon, deſerve particular notice. This beautiful inſect is as rare, as it is ſuperb, and the larva is ſcarcely, if at all known.—Our ſpecimen was taken in the middle of *June*, in a field near Kent.

FIG. II.

CUCULIO GERMANUS.

BLACK CURCULIO.

COLEOPTERA.

Curculio.

SPECIFIC CHARACTER.

Snout long, black Head, Thorax, Shells and Body black. Two ſmall ſpots of yellowiſh white on the ſides of the Thorax.

Linn. Syſt. Nat. 2. 613. 58. *Scopol. Ann. Hiſt. Nat.* 5. 91. 44. *Friſch. Inſ.* 13. 28. Tab. 26.

An Inſect found in abundance in Germany, and by no means uncommon in this and every other part of Europe. It is generally taken in *June*.

2
1

PLATE XXXV.

FIG. I.

Shews the natural ſize of the larva, of the

MUSCA CHAMÆLEON,

Deſcribed in Plate XXXI of this work.

FIG. II.

As it appears magnified. We have taken it ſince that plate was finiſhed, or we would have introduced it with the Fly. Being unacquainted with any perfect repreſentation of this aquatic larva, we are happy to give it before the completion of the firſt volume.

PLATE XXXVI.

FIG. I.

LIBELLULA PUELLA.

NEUROPTERA.

Wings four, naked, tranſparent, reticulated. With Veins or Nerves. Tail without a ſting.

GENERIC CHARACTER.

Mouth with two long lateral Jaws. Antennæ very ſhort, tail of the male forked. Wings extended.

SPECIFIC CHARACTER.

Body Saxon-greeniſh blue, Eyes diſtant, remote. Wings of equal length, with a cloud of brown in the middle, and without marginal ſpot. Length two inches.

Linn. Syſt. Nat. 2. 904. 20. *Fan. Sv.* 1470.

It is neither ſo large as to infuſe terror by its appearance, or ſo beautiful as to claim the firſt place in a collection of Britiſh inſects: notwithſtanding there are many inferior to it both in elegance, and colour. The whole of the body is a deep purpliſh blue, which reflects on one part, a moſt brilliant colour with a greeniſh caſt, and the clouds on the wings contribute much to its luſtre. The Thorax and Head are nearly the ſame, ſome few ſhades of green excepted.

It is found in *May* and *June*, ſporting on the waters, or among the buſhes which overgrow the ſides of pools, or gently flowing ſtreams; at noon, or after a ſhower, when the ſun breaks from its watery priſon, and penetrates the thickets, and the groves with inviting warmth, they are ſeen iſſuing from the dark retreat, and overhanging ſhrubbery; to baſk and wanton in its effulgent beams, and fan the gently riſing breeze with their lucid Wings. In many parts on the banks of the *Thames* they heighten the ſcene by the glow and richneſs of their colouring; the green, the blue, and the red; the yellow, purple, and the brown, in their richeſt teints, according to the ſpecies; and as they fly in various directions, diſplay themſelves in all their native elegance and ſplendor.

FIG. II.

LIBELLULA PUELLA.

NEUROPTERA.

LIBELLULA.

SPECIFIC CHARACTER.

Body red with yellow and black lines at each ſegment; thorax green with yellow ſtripes. Wings clear, with marginal ſpots.

The body is red, with a yellow band and black mark at every ſegment; the Thorax green, with longitudinal lines of yellow; the Wings are perfectly tranſparent, except a marginal ſpot on each. It is voracious, as are all the ſpecies of Libellula, whether in the larva or the winged ſtate; it appears about the ſame time as the preceding, and is the produce of an aquatic larva.

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THE

NATURAL HISTORY

OF

BRITISH INSECTS;

EXPLAINING THEM

IN THEIR SEVERAL STATES,

WITH THE PERIODS OF THEIR TRANSFORMATIONS, THEIR FOOD, ŒCONOMY, &c.

TOGETHER WITH THE

HISTORY OF SUCH MINUTE INSECTS

AS REQUIRE INVESTIGATION BY THE MICROSCOPE.

THE WHOLE ILLUSTRATED BY

COLOURED FIGURES,

DESIGNED AND EXECUTED FROM LIVING SPECIMENS.

BY E. DONOVAN, F.L.S.

AUTHOR OF THE NATURAL HISTORIES OF BRITISH BIRDS, SHELLS, &c. &c.

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THE

NATURAL HISTORY

OF

BRITISH INSECTS.

PLATE XXXVII.

PAPILIO IRIS.

EMPEROR OF THE WOODS, OR PURPLE HIGH FLYER.

LEPIDOPTERA.

GENERIC CHARACTER.

Papilio.

Antennæ clavated. Wings when at reſt, erect. Fly by day.

SPECIFIC CHARACTER.

Wings indented; above, purple; darker round the Edges, with ſeven diſtinct white Spots on the firſt Wings; on the ſecond, an irregular broad white Stripe, and a red Eye. Beneath, black, brown, and white.

Linn. Syſt. Nat. p. 476. P. cx.

The Papilio Iris is eſteemed among the beautiful, and placed with the rare of the *Engliſh Lepidoptera*. The curſory reader may not perceive that ſuperiority, particularly as many of the minute Inſects infinitely excel in real beauty and richneſs of colouring; but the ſcien-

tific will be ever ready to give it the firſt place as a Britiſh Papilio, and to thoſe a figure of the Caterpillar and Chryſalis will be an acceptable acquiſition. It derives the title of Purple High Flyer, as it very rarely deſcends to the ground; except in ſome few inſtances, it has never been taken but in the moſt elevated ſituations, and even thoſe inſtances have been after a ſtrong wind, or heavy rain: The tops of the loftieſt foreſt trees afford it an aſylum, and in the Caterpillar and Chryſalis ſtate, it is preſerved from the wanton cruelty of man, by the almoſt inacceſſible height of its habitation. They feed on the Sallow, *ſalix caprea*, and the Caterpillars are obtained by beating the branches of the tree with a pole twenty or thirty feet in length; it is then but a neceſſary precaution to cover the ground beneath with large ſheets to a certain diſtance, or the inſects which fall, will be loſt among the herbage.

It is in Caterpillar about *May* and *June*; it paſſes to the Chryſalis ſtate, and in *July* or *Auguſt* is a Papilio.

The great difficulty and trouble to rear the Caterpillars, when found; and greater difficulty to take the Fly, has ſtamped a valuable conſideration on it, and particularly ſo when fine, and a high price is but eſteemed an adequate compenſation for it if in good preſervation. The male is ſmaller, but more beautiful than the female; the upper ſide of the wings of the female not being enriched with that vivid change of purple which the male poſſeſſes in ſuch an eminent degree; but the underſide of the female is far richer in the various teints of colour than the male: they are both beautifully ſpotted, mottled, and waved with brown, black, white, and orange. The Chryſalis is of a very delicate texture, much reſembling thin white paper, and is tinged in ſeveral parts with a very lively purple hue which it borrows from the wings of the encloſed inſect, and bears the characteriſtic mark of a Papilio, by being ſuſpended from the tail, with the head downward.

PLATE XXXVIII.

CIMEX STAGNORUM.

Water Bug.

Hemiptera.

Shells or upper Wings ſemi-cruſtaceous, not divided by a ſtraight Suture, but incumbent on each other; Beak curved downward.

GENERIC CHARACTER.

Cimex Antennæ longer than the Thorax. Thorax margined. In each Foot three Joints.

SPECIFIC CHARACTER.

Black, brown, long, ſlender. Head one third of its whole length. Antennæ as long as the Head, and very ſlender. Eyes minute, prominent. Fore Legs ſhorteſt, length half an inch, breadth one third of a line.

Linn. Syſt. Nat.

Many ſpecies of the *Cimex* genus differ ſo materially in their general form, that very nice attention is neceſſary to diſcriminate the ſpecies which evidently belong to this extenſive family. The external appearance of the Houſe, or Scarlet Bug, cannot intimate the connection to the ſame genus with this ſlender bodied inſect; but ſo they are arranged by Linnæus, and ſo they will appear on a proper inſpection of thoſe parts which conſtitute their generic character.

The preſent ſpecies is common, and may be taken during great part of the warm ſeaſons. We have an Inſect of the ſame genus (*Cimex. Lacuſtris*) which has frequently attracted notice by the variety and activity of its motions, when ſporting on the ſurface of ſtagnant pools, or other ſtanding water: It appears to fly, or ſkim the ſurface, but its wings are not often expanded, the lightneſs of its body

and length of its legs, permitting it to dart with great velocity in any direction, and when it alights, it cauſes only a gentle tremulous motion beneath it. Its habits have much affinity to the generality of aquatic inſects, and being conſtantly found on that element, would almoſt determine it to be of that race; but it is rather amphibious, and very rarely deſcends beneath the ſurface. It will at intervals reſt for ſeveral minutes motionleſs on the water, its ſix legs are then expanded, and the tarſi of the feet only touch the ſurface; but the *Cimex Stagnorum* is remarkable for the regularity and carefulneſs of all its actions; it rarely runs, but treads the water, ſlow, and ever appears to apprehend danger; it frequently pauſes ſuddenly, and if it then perceives any thing diſagreeable, retires. Aquatic Inſects are generally ſupplied at ſeveral parts of their body with an oily matter that the water cannot penetrate, and the legs of this Inſect is apparently poſſeſſed of that property.

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PLATE XXXIX.

COCCINELLA.

COLEOPTERA.

GENERIC CHARACTER.

Antennæ knotted, truncated. Palpi longer than the Antennæ; Body hemiſpheric. Shells and Thorax bordered. In each Foot three Joints.

FIG. I. and FIG. IV.

SPECIFIC CHARACTER.

COCCINELLA 22—PUNCTATA.

Head black, Corſlet and Shells yellow. The firſt with five black Spots, the latter with twenty-two. Length 1½ line.

FIG. II.

14. PUNCTATA.

Shells orange, with fourteen black Spots. Head black. Thorax black in the Center, with an orange Margin and a black Spot on each Side.

FIG.

FIG. III.

6. PUSTALATA.

Head, Thorax, and Shells black, with three red Spots on each Shell. Length 1½ line.

FIG V.

7. PUNCTATA.

LADY COW, OR LADY BIRD.

Head and Thorax black, Shells red, with ſeven black Spots; length, three or four lines.

The hiſtory of thoſe ſeveral inſects ſo nearly reſemble each other, that one general account will compriſe all that can be ſaid of any of the ſpecies. The larva is not unlike the adult inſect, though its body is longer and tapering, and it hath no ſhells to defend it if in danger; its ſecurity therefore depends on its feet, which are rather longer, or at leaſt appear longer, than in the after-ſtate; all the ſpecies, whether as the larva or the adult, commonly feed on graſs, but they as frequently are taken on the plantain, thiſtle and roſe, or any other plant, whether wild or cultivated. They faſten themſelves to the leaves of any plant that is near when they enter the Chryſalis ſtate, and its appearance is then as if it were tied to the leaf by threads which paſs each other in tranſverſe directions; they remain only a few days in the Chryſalis, as it undergoes but little change. May, June, and July, or later if the weather ſhould prove fine, is the time to find them; many of the ſpecies are ſo numerous in almoſt every ſituation, that collectors give little trouble to obtain them, or at leaſt ſearch for ſuch only as are moſt uncommon.

PLATE XL.

PHALÆNA ROSEA.

Red Arches.

Lepidoptera.

GENERIC CHARACTER.

Antennæ taper from the baſe. Wings in general contracted when at reſt. Fly by night.

SPECIFIC CHARACTER.

Roſe colour. On t.. perior Wings a dark, waved, or arched line, and a row of ſpots near the margin.

The Caterpillar of this *Phalæna* feeds on the Oak. Our ſpecimen was taken from an oak at Norwood, July 15. They are not very common, although found, during the month of July, in ſeveral parts near London.

FIG I.

THE LARVA

OF THE

Coccinella 7—Punctata.

In Plate XXXIX we have repreſented ſeveral ſpecies of the *Coccinella* in their perfect or adult ſtate. Our preſent figure is the larva of the 7 *Punctata*, Fig. V. It is a very common Inſect; and will feed on almoſt every kind of vegetable food.

PHALÆNA PRASINANA?

SCARCE SILVER LINE.

LEPIDOPTERA.

Phalæna.

SPECIFIC CHARACTER.

Body and under Wings white, firſt Wings green, with two oblique narrow lines of pale yellow.

We poſſeſs two ſpecies of the Green Silver Line; one Phalæna Praſinana, of Linnæus; the ſecond unknown to that author; but ſince deſcribed in the *Species Inſectorum* of *Fabricius*. Thoſe two ſpecies nearly reſemble each other, are both taken from the Oak, and are diſtinguiſhed only in ſome few particulars, the *Scarce Silver Line* has its Superior Wings of a plain pea-green, with two ſtripes of feint yellow, the Body and inferior Wings are of an immaculate white. But the Common Silver Line is more variegated in its colour, having a daſh of a paler hue between each Silver Line, and an orange or crimſon border. The Scarce Silver Line is taken in July, in woods.

Note, Fabricius appears to have changed the name of this Inſect in his *Spec Inſ.* for in the *Syſtem Entom.* he calls the common Silver Line Praſinana, the ſame as Linnæus does, which in the *Spec* he has altered to *Fagana.*

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PLATE XL.

FIG. I.

VORTICELLA POLYMORPHA.

GENERIC CHARACTER.

A Worm, capable of contracting or extending itſelf, naked, with rotatory cilia.

Many-ſhaped Vorticella green, opaque.

It is impoſſible to deſcribe the various forms thoſe little Inſects can aſſume; and, from the microſcope, it is both doubtful and difficult to give a correct figure of it, as the activity of its motions and changes frequently miſplace it from the verge of the focus. It is ſcarcely perceptible to the naked eye, and is generally of a green colour.

FIG. II.

VORTICELLA ROTATORIA.

SPECIFIC CHARACTER.

Cylindrical Vorticella, with a little foot projecting from the neck; a long tail, furniſhed with four points.

Of all the ſpecies of minute Inſects, this Vorticella ſeems to have engaged the attention of the curious moſt. Baker has deſcribed

it under the title of *the Wheel Animalculum*, and hence it is well known. It is found in gutters, or leaden pipes, in the ſummer. This Inſect poſſeſſes one property by no means common to larger animals, or even known of many of the minuter kinds; it lives in the water, but may be kept dry for months; and when again it is immerged in that element, it will regain its life and motion in half an hour.

FIG. III.

TRICHODA LYNCEUS.

GENERIC CHARACTER.

An inviſible, pellucid, hairy Worm.

SPECIFIC CHARACTER.

Nearly ſquare; with a crooked beak. The mouth hairy.

FIG. IV.

KERONA PATELLA.

GENERIC CHARACTER.

An inviſible Worm with horns.

With one valve, orbicular, chryſtalline; the fore-part notched; the body lies in the middle of the ſhell: above and below are hairs or horns, of different lengths, jutting out beyond the ſhell, and acting inſtead of feet and oars.

Müller's Ani. Infuſ.

2

PLATE XLII.

FIG. I.

ICHNEUMON RAMIDULUS.

HYMENOPTERA.

Wings four; generally membraneous. Tail of the females armed with a ſting.

GENERIC CHARACTER.

Ichneumon. Jaws, without tongue. Antennæ of more than 30 joints, long, filiform, vibrating. Sting within a bivalve ſheath.

SPECIFIC CHARACTER.

Tawny brown. Thorax beneath, and extremity of the abdomen, black. Abdomen curved and compreſſed.

FIG. II.

ICHNEUMON RAPTORIUS.

SPECIFIC CHARACTER.

Head, thorax, and extremity of the abdomen black; center ſpot of yellow on the thorax; and two firſt diviſions of the abdomen bright orange. Legs black and brown.

Ichneumons are the moſt voracious of all the winged Inſects;—in their nature, robuſt and powerful, and armed with a formidable ſting; they are the dread, and deſtroyer of other tribes, and mortal enemies to each other; like the animal * whence their ſignificant appellation is derived, they exiſt by rapine and plunder, and ſupport their infant offspring on the vitals of larger Inſects.

The female Ichneumon, when ready to lay her eggs, is ſeen eagerly ruſhing from one plant to another, if its prey offers, which is generally the Larva of the *Phalæna*, *Papilio*, &c. it darts down with the ferocity of an eagle, and graſps the tender body in its claws; it is now in vain that the unwieldy animal attempts reſiſtance, as all its efforts are but the ſport of a ſavage conqueror. For raiſing the body almoſt upright, or into the form of a bow, the creature returns it in an inſtant, and daſhes the ſting up to the baſe, in the ſofteſt part of the caterpillar's body; this, if undiſturbed, it will repeat thirty or forty times, always chooſing a freſh ſpot for every new wound, and often entirely ſcarifying the Inſect. The ſtung animal refuſes to eat, and ſometimes its illneſs terminates in its death, though generally the eggs are matured, and the Inſects produced from the living body, ſo that if it ſurvives its miſery, and the wounds heal, the heat of the body ripens the embryos, and the young Ichneumons gnaw, and tear large paſſages through the body, to complete their delivery. July and Auguſt are the Months thoſe ſpecies we have deſcribed are on the wing.

* The Ichneumon is a well known animal in Egypt, particularly near the river Nile, and are uſeful for deſtroying the Eggs of the Crocodile, &c.

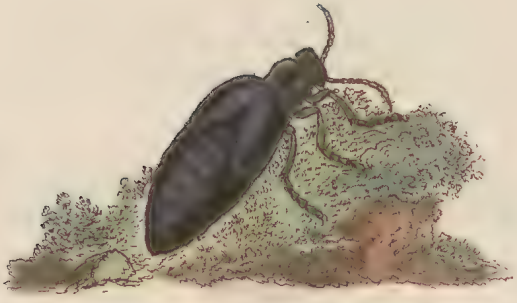


PLATE XLIII.

PAPILIO HYALE.

SAFFRON BUTTERFLY.

LEPIDOPTERA.

GENERIC CHARACTER.

Antennæ clavated. Wings, when at reſt, erect. Diurnal.

SPECIFIC CHARACTER.

Wings entire, rounded, deep yellowiſh orange. On the ſuperior wings a black, and on the inferior wings an orange ſpot in the center; and a deep irregular border of black on the margin. Antennæ and legs yellow. Breadth two inches.———*Syſt. Ent.* 477. 148.—*Linn. Syſt. Nat.* 2. 764. 100.—*Fn. Sv.* 1040.

The *Papilio Hyale* has been deſcribed by ſeveral authors, Engliſh and Foreign, and the natural hiſtorians of Germany have generally noticed it. Unlike many Inſects we have in our country, it is found in every part of Europe, but in greater abundance in Africa and America.

Its breadth in England rarely exceeds two inches; but influenced by a warmer climate, they arrive at a higher degree of perfection than in thoſe northern countries, at leaſt they are commonly taken much larger. With us it has ever been eſteemed as a rare inſect, though ſeen this ſeaſon in Kent in greater plenty than for ſeveral years; but as they were probably only an accidental brood, they may again diſappear for a conſiderable time. The Fly is to be taken in autumn, but ſeldom after Auguſt.

Our Figure is of the male;—the female has ſeveral irregular yellow ſpots on the black borders.

PLATE XLIII.

MELOE. PROSCARABEUS.

COLEOPTERA.

GENERIC CHARACTER.

Antennæ globular, the laſt globule oval. Thorax roundiſh. Shells ſoft. Head gibbous, and bent downwards.

SPECIFIC CHARACTER.

Blue, black. No wings. Shells ſhort. Abdomen long. Antennæ thickeſt in the middle. Head broad. Thorax narrower than the head, and without margin. Length 1$\frac{1}{4}$ inch.——*Syſt. Ent.* 259. 1.—*Linn. Syſt. Nat.* 2. 679. 1.—*Fn. Sv.* 826.

It is by no means for the beauty, but ſingularity of this creature that we have given it a place in our preſent ſelection. If it is too perfect for the larva of an Inſect, it certainly appears too imperfect for the adult ſtate; it has ſhells, but cannot fly, and their length compared with the proportion of the body contributes much to its awkward appearance. It is very quick-ſighted, and runs with ſwiftneſs when in danger. After death the body is conſiderably contracted, and the native brilliancy of colour it poſſeſſed while living immediately vaniſhes. When touched, a brown liquor oozes from the ſides.

We have ſeveral ſpecies of the Meloe differing in ſize, colour, and proportion; the *Meloe Proſcarabeus* is the moſt common, at leaſt near London. It feeds under the ſurface of the ground, on the tender fibrils of plants, and prefers the light earth of the flower-garden for its devaſtation. May be taken in May or June.

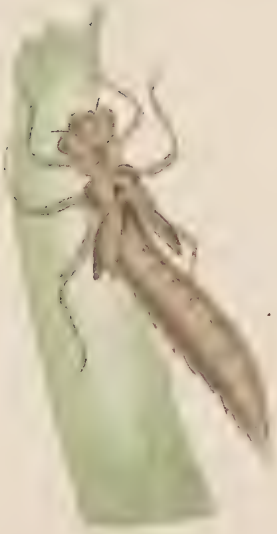


PLATE XLIV.

THE LARVA OF THE LIBELLULA DEPRESSA.

In Plate 24 of this work we have repreſented the LIBELLULA DEPRESSA in the winged ſtate, and our preſent Figure is, of the Larva of that Inſect. We have before deſcribed it as a ſavage voracious creature in every ſtate of its exiſtence. The Larva, which is an aquatic, feeds on Inſects of that element; and when it becomes adult, Moths, Butterflies, and other winged Inſects are its prey. As Lepidopterous Inſects are not provided with any weapons, defenſive or offenſive, it will encounter the largeſt, graſp them in its claws, and tear them to pieces. Its mouth is ſpacious, and well adapted for that purpoſe.

The Larvæ of moſt winged Inſects paſs to the Aurelia, or Chryſalis ſtate, and thence produce the Fly; but the Larvæ of the *Libellulæ* never undergoes that change, and though its appearance is altered ſeveral times in its progreſs to perfection, it does not become dormant. When the ultimate period of its laſt change arrives, it crawls to the bank, or ſide of the ditch, and affixing its legs firmly to the ground, or graſs, it collects all its ſtrength, and by one violent effort the ſuture between the Thorax and Abdomen is broken, whence the Head and Thorax is protruded; after ſome pauſe the exuvia is caſt off, and the Wings, which were before enwrapped in the ſhort caſes at the bottom of the Thorax, expand. The creature now entirely formed for flight, only waits a ſhort time to exhale the ſuperfluous moiſture, and then ruſhes into the air, to ſpread havoc and diſorder.

PLATE XLV.

PHALÆNA JACOBÆÆ.

Cinnabar Moth.

Lepidoptera.

GENERIC CHARACTER.

Phalæna.

Spiral Trunk; Back ſmooth, without Creſt.

SPECIFIC CHARACTER.

Antennæ and body black. Firſt Wings dark olive, with longitudinal red line near the anterior margin, and two red ſpots near the exterior. Second Wings red, with a black margin.——*Syſt. Ent.* 588. 113.—*Linn. Syſt. Nat.* 2. 839. 111.—*Fn. Sv.* 1155.

As the Rag-wort grows ſpontaneouſly in almoſt every part of the country, the yearly increaſe of the Cinnabar Moth Caterpillars is generally conſiderable; and though many muſt inevitably periſh before they arrive at perfection, the Fly may always be found in plenty in June, the Caterpillars in July and Auguſt.

PLATE XLVI.

PHALÆNA FESTUCÆ.

GOLD SPOT MOTH.

LEPIDOPTERA.

GENERIC CHARACTER.

Spiral Trunk; Back ſmooth, without Creſt.

SPECIFIC CHARACTER.

Firſt Wings brown, with two gold-ſilver ſpots on each. Second Wings and Abdomen pale brown. Head, Antennæ and Thorax bright orange brown.——*Syſt. Ent.* 607. 71.—*Linn. Syſt. Nat.* 2. 845. 131.—*Fn. Sv.* 1170.—*Degeer Inſ. Vers. Germ.* 2. 1. 312. 3.—*Albin. Inſ. Tab.* 84. *Fig* G. H.—*Wilks Pap.* 8. *Tab.* 1. *a.* 17.—*Acta Holm.* 1748. *Tab.* 6. *Fig.* 3. 4.—*Kleman. Inſ.* 1. *Tab.* 30. *Fig.* A.

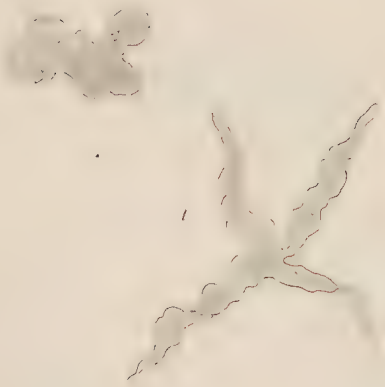
The Caterpillars which are ſmooth, and of a plain green colour, are found on ſuch plants as grow in ditches, or fenny ſituations.—The Siſymbrium Naſturtium, *Water Creſs*, is its common food, but it will devour with avidity moſt aquatic vegetables, particularly the *Feſtuca Fluitans*, *Floating Feſcue Graſs*. It is eſteemed one of the rareſt Species of Phalænæ we have in this country, its elegant form and rich colouring determines it alſo one of the moſt beautiful. Near

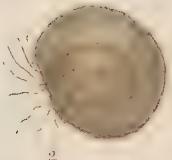
London it has been ſought with moſt ſucceſs in the Batterſea Fields, or on thoſe banks which abound with aquatic plants, between Batterſea and Richmond; the marſhes in the vicinity of Deptford and Rotherhithe have been yet more productive; we do not however underſtand that any have been taken this ſeaſon about the metropolis.

The very ſingular manner in which this Caterpillar conſtructs its web, deſerves particular notice: previous to its transformation from the *Larva* to the *Aurelia*, it quits the tender plants which afford nouriſhment, and retires to thoſe, better calculated for its protection, in its defenceleſs ſtate; its choice is generally the Scirpus Lacuſtris (*Bull Ruſh*), or the ſtouteſt plant that is near, if its leaves are ruſhy and ſtrong. Its firſt proceſs is to make a deep inciſion acroſs the leaf, which it effects with little labour, as its mouth is well armed for the purpoſe; the upper part of the leaf being thus deprived of its ſupport, inſtantly becomes dependent; the Caterpillar embraces the two ſurfaces of the fractured leaf, and weaves its web between. The web is of an exquiſite texture and whiteneſs, and bears great reſemblance to the webs of ſome ſpiders that frequent watery places.

The Caterpillars are found in June and July, the Fly in Auguſt.

PLATE





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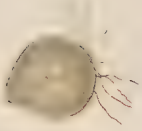


PLATE XLVII.

FIG. I.

PROTEUS DIFFLUENS.

GENERIC CHARACTER.

An inviſible, very ſimple, pellucid Worm, of a variable form.

SPECIFIC CHARACTER.

Proteus, branching itſelf out in a variety of directions.

FIG. II.

TRICHODA BOMBA.

GENERIC CHARACTER.

An inviſible, pellucid, hairy worm.

SPECIFIC CHARACTER.

Changeable, with a few hairs diſperſed on the fore part.
Müller's Ani. Inf.

Proteus Diffluens, under ſome of its changes appears rather a ſhapeleſs maſs, than an animated body; it conſiſts of gelatinous, pellucid ſubſtance, replete with dark coloured molecules, which either direct or attend, the internal exertions and actions of the animalculum; it puſhes forth branches of various ſhapes.

Is found in fenny ſituations, but very rare; the author of the *Animacula Infuſoria*, obſerved it only twice.

TRICHODA BOMBA.

Inconſtant as the former, and nearly as difficult to define; it is ſometimes ſpherical, immediately after it will become oval, Kidney ſhaped, &c. It is very lively, and darts with much velocity; is thick, pellucid, and of a clay colour, or brighter.

PLATE

PLATE XLVIII.

FIG. I.

TIPULA CROCATA.

DIPTERA.

Wings two.

GENERIC CHARACTER.

Head long. Palpi 4, curved. Trunk very ſhort.

SPECIFIC CHARACTER.

Black ſpotted with yellow. Legs tawny, with black feet, and a black ring round the poſterior thighs. Wings tawny, with a marginal brown ſpot.

Syſt. Ent. 748. 5.—*Linn. Syſt. Nat.* 2. 971. 4.—*Fn. Sv.* 1739.
Geoff. Inſ. 2. 553. 7. *Tab.* 19. *Fig.* 1.
Degeer Inſ. 6. 349. 10.
Raj. Inſ. 72. 4.
Schaeff. Icon. Tab. 126. *Fig.* 4.
Scop. carn. 845.

FIG.

FIG. II.

TIPULA RIVOSA.

SPECIFIC CHARACTER.

Brown-grey. Eyes black. Antennæ feathered. Wings larger than the body, with three brown patches near the margin. Tail of the female bifid. Length one inch.

Syſt. Ent. 748. 2.—*Linn. Syſt. Nat.* 2. 971. 2.—*Fn. Sv.* 1738.
Geoff. Inſ. 2. 554. 2.
Degeer. Inſ. 6. 341. 2. *Tab.* 19. *Fig.* 1.
Raj. Inſ. 72. 2.
Scop. carn. 846.
Acta Holm. 1739. *Tab.* 9. *Fig.* 8.
Sulz. Inſ. Tab. 20. *Fig.* 128.

The Genus *Tipula*, compriſes an extenſive family of the Dipterous Order, or of ſuch Inſects as are furniſhed with two Wings only. Our largeſt Species are *Tip.* Rivoſa, Crocata, Lunata, &c. the moſt common is *T.* Oleracea, generally known by the trivial appellations, *Long Legs*, *Old Father*, &c. It is, as are alſo the other Species, perfectly harmleſs and inoffenſive; yet their ſingular form, and more particularly the extraordinary diſproportion of their legs, operates frequently to their diſadvantage with the ignorant, who readily ſuppoſe they have to avoid, the ſecreted ſting, of whatever appears aukward or uncommon.

Our ſmaller Species are infinitely more numerous, and many of them are not deſcribed, being ſo very minute as to remain unnoticed. The *Tipula Plumoſa*, Plate XXII, differs materially in its general appearance from the larger kinds.

We rarely find a ſpecimen of the larger kinds of Tipula with the legs complete; the loſs of one or two of thoſe members do not materially retard the briſkneſs of its motions, but it cannot fly after ſuffering a total amputation, though it will then live a conſiderable time.

The Tipula Rivoſa being entangled by two of its legs in the ſnare of a large ſpider [ARANEA DIADEMA], at firſt endeavoured to diſengage them by force, but this rather added to its calamity, and a third leg was attracted by the glutinous matter on the threads; the ſpider approached, and the creature accelerated its eſcape by leaving its legs in the web. It is very common to obſerve the broken limbs of the *Tipulæ* in the ſnares of this ſpecies of ſpider.

The Larvæ of many Tipulæ, more eſpecially the very minute ſorts, are found in ſtanding water, but the larger, generally feed on the roots of graſs, and may be found by turning up the light ſurface of the earth. The Tipula Rivoſa is taken in May and June, the Tipula Crocata in June and July; the latter is obſerved in the flower-garden or orchard.

PLATE XLIX.

ARANEA DIADEMA.

WHITE CROSS, SPIDER.

APTERA.

No wings.

GENERIC CHARACTER.

Legs eight. Eyes eight.

SPECIFIC CHARACTER.

Abdomen gibbous, red-brown, with white ſpots in the form of a croſs.

Syſt. Ent. 434. 13.—*Linn. Syſt. Nat.* 2. 1030. 1.
—*Fn. Sv.* 1993.

ARANEA cruciger.—*Degeer. Inſ.* 7. 218. 1. *Tab.* 11. *Fig.* 3.

ARANEA Linnæi.—*Scop. carn.* 1077.
Mouff. Inſ. 233. *Fig.* 1.
Aldrov. Inſ. 608. *Fig.* 9.
Tonſt. Inſ. Tab. 18. *Fig.* 17. 19. 20.
Raj. Inſ. 18. 2.
Liſt. Aran. Fig. 2.
Friſch. Inſ. 7. *Tab.* 4.
Clerk. Aran. Tab. 21. *Fig.* 2.
Schaeff. Elem. Tab. 21. *Fig.* 2.
——— *Icon. Tab.* 19. *Fig.* 9.

The Genus *Aranea* includes a vaſt, if not endleſs variety of ſpecies, and though the greateſt diſſimilarity may be obſerved as to ſize, proportion, or colouring, of many individual kinds, yet the rapaciouſneſs

common to the family, is apparent in all. Our domeſtic Spiders are plain in their colours, and ſeldom attain a very extraordinary ſize; the gardens are infeſted by ſpecies ſomewhat larger, and more lively in their marks and teints, but if we wiſh to trace the juſt gradations of the beauty, or ſize, of thoſe deteſtable creatures, the foreſts abound; and will afford the higheſt gratification to the enquiries of the naturaliſt. We have Spiders purely white, or white ſtained with a lovely green; yellow, marked with a vivid red; purples ſhaded with the richeſt hues, and the brighteſt browns, beſpangled with the utmoſt elegance and ſymmetry: Yet under thoſe rich adornments which nature has ſo profuſely beſtowed on this complication of beauty, and ferocity, we diſcover inherent qualities, which, in larger animals, would become formidable, and though we feel confident of our ſuperiority over the inſidious art of ſuch a contemptible creature, yet the mind is ſuſceptible of an inward abhorrence at its touch, which neither the expanſion of philoſophy, or ignorance of its diſpoſition, will ſometimes ſuppreſs. It is probable, that *Thomſon*, in his deſcription of the Spider, felt this ſympathy of the human mind,

" ——— To heedleſs flies the window proves
A conſtant death; where, gloomily retired,
The villain Spider lives, cunning and fierce,
Mixture abhorr'd! Amid a mangled heap
Of carcaſes, in eager watch he ſits,
O'er-looking all his waving ſnares around.
Near the dire cell, the dreadleſs wanderer oft
Paſſes, as oft the ruffian ſhews his front;
The prey at laſt enſnar'd, he dreadful darts
With rapid glide along the leaning line;
And fixing in the wretch his cruel fangs,
Strikes backward grimly pleas'd: the flutt'ring wing,
And ſhriller ſound declare extreme diſtreſs,
And aſk the helping hoſpitable hand."

Early in the ſpring we find the neſts of Spiders in the crevices of old walls, trees, and other obſcure places. They are encloſed in webs of a white, yellow, or grey colour, varying according to the ſpecies;

ſpecies; immediately that the warmth of the ſun has hatched them, they diſperſe, it being no longer neceſſary to live in ſocieties, which indeed, would deprive ſome of their ſubſiſtence.

In February we took a neſt of minute yellowiſh eggs, which proved to be the infant offſpring of the A. Diadema, they ſcarcely exceeded the ſize of a pin's head when hatched, and were of a bright yellow colour; at firſt their food was the common houſe fly, but their increaſe in bulk was ſo rapid that it was neceſſary to deſtroy many, to preſerve a few; we therefore ſelected four ſpecimens, which being fed in ſeparate glaſſes, and on different inſects, exhibited each a diſtinct degree of ſtrength, and colour. One ſpecimen deſtroyed thirty of the common houſe fly in a day; it then appeared much enlarged, and the colours were almoſt black, except the ſpots of white, which ſparkled with infinite luſtre; but being confined a week without a freſh ſupply, its colours were conſiderably faded; another week of abſtinence reduced its colours to a pale uniform brown, the body was much waſted, and the creature became perfectly ravenous. It devoured a vaſt quantity of food, and recovered much of its former colours a few hours after.

Our largeſt Spiders are incomparable for their ſize, or venomous qualities, to the productions of America, or of the eaſtern countries; in Germany they are far ſuperior in ſize to our ſpecimens, but in Surinam they are infinitely ſurpaſſed, Spiders of thoſe parts being often found with legs as thick as a gooſe-quill, and three or four inches in length, which with difficulty ſupport a body as large as a pullet's egg. Their ſnares are commonly extended from one branch of a tree to another, covering the ſpace of twenty or thirty feet, and is ſufficiently ſtrong to entangle the largeſt inſects. A. Seba has figured a Spider of this deſcription, as deſcending from an arm of a tree, into the neſt of a ſmall ſpecies of Humming Bird, to ſuck the blood of the parent, and eggs.

"The eyes of the Spider are a very beautiful microſcopic object, viewed either as tranſparent or opake; they have generally eight, two on the top of the head, that look directly upwards; two in the front, a little below the foregoing, to diſcover what paſſes before it; and on each ſide a couple more, one whereof points ſideways forward, the other ſideways backward; ſo that it can ſee almoſt all around it. They are immoveable, and ſeem to be formed of a hard, tranſparent, horny ſubſtance. The number of eyes is not the ſame in all the ſpecies of the

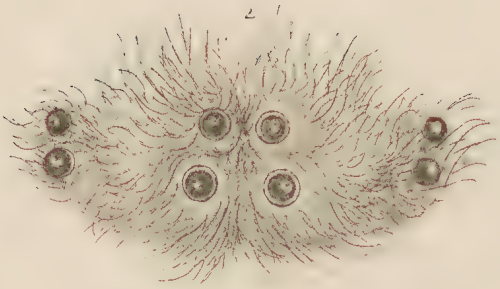
Spider. They have eight legs, with ſix joints, thickly beſet with hairs, and terminating in two crooked moveable claws, which have little teeth like a ſaw; at a ſmall diſtance from theſe claws, but placed higher up, is another, ſomewhat like a cock's ſpur, by the aſſiſtance of which it adheres to it's webs; but the weapon wherewith it ſeizes and kills its prey is a pair of ſharp crooked claws, or forceps, placed in the fore-part of the head. They can open or extend theſe pincers as occaſion may require; when undiſturbed they ſuffer them to lie one upon another. Mr. *Lewenhoeck* ſays, that each of theſe claws has a ſmall aperture, or ſlit, through which he ſuppoſes a poiſonous juice is injected into the wound it makes.

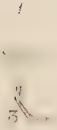
"The exuvia of the Spider, which may be found in cobwebs, being tranſparent, is an excellent object; and the fangs, or forceps, may be eaſier ſeparated from it, and examined with more exactneſs than in a living Spider. The contexture of the Spider's web, and their manner of weaving them, have been diſcovered by the microſcope. The Spider is ſupplied with a large quantity of glutinous matter within it's body, and five dugs, or teats, for ſpinning it into thread. This ſubſtance, when examined accurately, will be found twiſted into many coils, of an agate colour, and which, from its tenacity, may be eaſily drawn out into threads. The five teats are placed near the extremity of its tail; from theſe the aforeſaid ſubſtance proceeds; it adheres to any thing it is preſſed againſt, and being drawn out, hardens in the air. The Spider can contract or dilate at pleaſure the orifices through which the threads are drawn. The threads unite at a ſmall diſtance from the body, ſo that thoſe which appear to us ſo fine and ſingle, are notwithſtanding compoſed of five joined together, and theſe are many times doubled when the web is in formation."

——— The Spider parallels deſign,
Sure as Du Moivre, without rule or line.

POPE.

PLATE





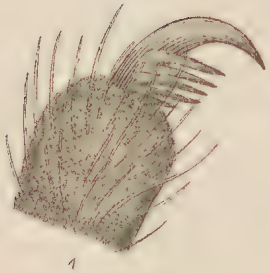


PLATE L.

FIG. I.

The head and thorax, natural ſize.

FIG. II.

A fragment of the head, with the eyes complete, as it appears when examined by the ſpeculum of an opaque microſcope, deſcribing the ſituation of thoſe organs, in this ſpecies of Spider.

FIG. III.

One of its fore claws, natural ſize.

FIG. IV.

The extremity of the claw magnified. Every foot is conſtructed after this form.

PLATE LI.

PHALÆNA PISI.

Broom Moth.

Lepidoptera.

GENERIC CHARACTER.

Antennæ taper from the baſe. Wings, in general, contracted when at reſt. Fly by night.

Noctua.

SPECIFIC CHARACTER.

Firſt wings red brown, clouded with dark brown, two ſpots in the centre, and a pale yellow undulated line near the exterior margin. Second wings and abdomen light brown with a broad ſhade of a greyiſh colour.

Syſt. Ent. 610. 88.—*Lin. Syſt. Nat.* 2. 854. 172.—*Fn. Sv.* 1206.—*Degeer. Inſ. Verſ. Germ.* 2. 1. 322. 10.
Raj. Inſ. 160. 10.
Wilks pap. 4. *Tab.* 1. *a.* 7.
Roeſ. Inſ. 1. *Phal.* 2. *Tab.* 52.
Merian. Europ. Tab. 50.

The Caterpillars will devour indiſcriminately the leaves of the knot-graſs, of peaſe, the broom, &c. it is from the latter food, the Moth receives its name. The Caterpillars are found in July and

Auguſt, and deſcend into the ground late in September or the firſt week in October, and the Fly comes forth in July.

Caterpillars that enter the earth in the larva form, paſs to the chryſalis, and iſſue forth in the perfect or Fly ſtate, have no occaſion for a web to protect them; and therefore few ſpecies prepare one. But among thoſe which remain expoſed in the open air, a very ſmall proportion neglect to weave a web with the utmoſt ſkill and induſtry; the leaſt attentive to this apparently neceſſary precaution are the Papiliones, who, often regardleſs of their ſituations, are found [in chryſalis] ſuſpended againſt walls, the trunks, or branches of trees, and even paleings in very public roads.

PLATE LII.

SPHINX TIPULIFORMIS.

CURRANT SPHINX.

LEPIDOPTERA.

GENERIC CHARACTER.

Antennæ ſomewhat priſm form, tapering at each end: tongue in general exſerted: feelers two, reflected: wings deflected.

* SESIA *Fabr.*

SPECIFIC CHARACTER AND SYNONYMS.

Wings tranſparent with the margin and band black: abdomen black, and bearded, the alternate inciſures yellow.

SPHINX TIPULIFORMIS. *Linn. Syſt. Nat.* 2. 804. 32.—*Fn. Su.* 1096.

SESIA TIPULIFORMIS: alis feneſtratis: margine faſciaque nigris, abdomine barbato nigro: inciſuris alternis margine flavis. *Fabr. Ent. Syſt. T.* 3. *p. I.* 385. 21.

Clerk. Icon. Tab. 9. *Fig.* 31.
Fueſſ. Magaz. Tab. 1. *Fig.* 6.
Harr. Inſ. angl. Tab. 3. *Fig.* 8.

A very elegant, and common Species of the Sphinx *genus:* it is taken in June and July. After the Inſect dies, the colour of the thorax and abdomen, except the yellow bands, is entirely black, or black with a very faint gloſs of a reddiſh blue: but is an exceedingly brilliant dark purple, while the creature is alive; and the yellow belts on the alternate diviſions of the body, glitter in the ſunſhine with the effulgence of molten gold. The legs are yet more beautiful, as the purple, though paler, is of a livelier luſtre; and every joint is deeply fringed with the ſame golden colour as that on the body. The wings, which are perfectly tranſparent, except at the apex, are delicately veined, and ribbed with black lines. The fan or bearded tail of the body is expanded or contracted at pleaſure.

If the creature burſts from its chryſalis in the morning, it is generally obſerved ſporting among the leaves of the neareſt plants about noon; and this is commonly the time the male is ſeen ſeeking its mate.

The very ſingular appearance of this inſect before the lens of the opake microſcope, induces us to give this magnified figure in addition to the plate in which the larva, pupa, and perfect ſtate are delineated in the natural ſize.

PLATE LIII.

SPHINX TIPULIFORMIS.

CURRANT SPHINX.

LARVA, PUPA, and SPHINX of the Natural Size.

The female of this ſpecies depoſits her eggs in the crevices of the ſmaller branches and twigs of buſhes. A peculiar inſtinct almoſt invariably directs her to the ſtalks of the currant tree, which are not only eaſily penetrated but afford the moſt grateful nouriſhment to the young brood. Immediately that the larva is enlarged from the egg, it perforates the ſtalk; and having entire poſſeſſion by this means of the inner channel, feeds on the pith, or medullary ſubſtance, which is abundant in the ſtalks of this particular plant. Thus beſides obtaining food in plenty, it is ſecured from the attacks of many depredators, to which all larvæ or caterpillars are expoſed, with the exception of internal feeders.

It changes to the pupa ſtate in the hollow or cavity it has formed within the ſtem.

A ſhort time before the inſect burſts forth, the pupa or chryſalis is protruded through the outer bark, preciſely in the ſame manner as the pupa of Sphinx Apiformis, (Plate 25), and is ſupported by a ſimilar contrivance, every ſegment being ſerrated, or armed, with a row of very minute teeth, which firmly embrace the ſubſtance of the ſtalk, and elevate the Chryſalis in an oblique poſture; until the laſt efforts of the Inſect completely diſengages it from the caſe.

Sphinx tipuliformis is the only kind of Hawk moth with tranſparent wings common near London, and is alſo one of the ſmalleſt inſects of this diviſion of the Linnæan Sphinges. The currant Sphinx is taken in June.

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PLATE LIV.

FIG. I.

CICADA SANGUINOLENTA.

HEMIPTERA.

GENERIC CHARACTER.

Snout inflected: antennæ ſetaceous; wings four, membranaceous and deflected: legs generally formed for leaping.

SPECIFIC CHARACTER

AND

SYNONYMS.

Black; wing-caſes with two ſpots, and a band of ſanguineous red.

CICADA SANGUINOLENTA *Gmel.* 2101. 22.

CERCOPIS SANGUINOLENTA: atra, elytris maculis duabus faſciaque ſanguineis. *Fabr. ſp. inſ.* 2. *p.* 329. *n.* 3.

Cicada nigra, elytris maculis ſex rubris, *Geoffr. inſ. par. I. p.* 418. *t.* 8. *f.* 5.

One of the moſt beautiful of the *Cicadæ* found in this Country. Though common in ſome parts of Europe, it is rare with us. We have obſerved it chiefly among the chalky ſoils of Kent, and in the woods about Dartford. It is taken in June and July.

FIG.

PLATE LIV.

FIG. II.

CICADA SPUMARIA.

CUCKOW-SPIT INSECT, or

"FROTH WORM."

SPECIFIC CHARACTER

AND

SYNONYMS.

Fuſcous: wing-caſes with two lateral white ſpots.

CICADA SPUMARIA: fuſca, elytris maculis binis albis lateralibus: faſcia duplici interrupta albida. *Linn. Fn. Suec.* 881.

Cicada fuſca, faſcia duplici albida interrupta tranſverſa.—*Geoff. Inſ.* 1. 415. 2.

Cicada Spumaria Graminis fuſca, alis ſuperioribus maculis albis.—*Degeer Inſ.* 3. 163. 1. *Tab.* 11. *Fig.* 1—21.

Locuſta pulex Swammerdamii, nobis Cicadula.—*Raj. Inſ.* 67.

Ranatra bicolor, capite nigricante.——*Petiv. Gazoph. Tab.* 61. *Fig.* 9.

Cicada fuſca alis ſuperioribus maculis albis, in ſpuma quadam vivens.—*Degeer Acta Holm.* 1741. 221.

Vermes ſpumans.—Friſch. Inſ. 8. 26. *Tab.* 12.

Locuſta germanica.—*Roeſ. Inſ.* 2.—*Gryll. Tab.* 23.

Sulz. Inſ. Tab. 10. *Fig.* 64.

Schaeff. Elem. Tab. 42.

Fueſly. Inſ. Helv. 450.

CERCOPIS *ſpumaria.—Fab. Spec. Inſ. tom.* 2. 329.

Cicada

Cicada Spumaria is not only common in this country, but is abundant in every part of Europe. It frequents moſt plants, but thoſe eſpecially which exhale much moiſture. The food of the larva appears entirely of the vegetable kind, and conſiſts, perhaps, for the moſt part, of the ſuperabundant fluids which all plants tranſpire.

" The CUCKOW-SPIT, or FROTH-WORM, is often found hid in that frothy matter which we find on the ſurface of plants. It has an oblong, obtuſe body; and a large head, with ſmall eyes. The external Wings, for it hath four, are of a duſky brown colour, marked with two white ſpots: the head is black. The ſpume in which it is found wallowing, is all of its own formation, and very much reſembles frothy ſpittle. It proceeds from the vent of the animal, and other parts of the body; and, if it be wiped away, a new quantity will be quickly ſeen ejected from the little animal's body. Within this ſpume, it is ſeen in time to acquire four tubercles on its back, wherein the wings are encloſed; theſe burſting, from a reptile it becomes a winged animal." *Adams.*

The colour of the winged Inſect is found to vary from a deep chocolate, to a very pale brown. It is taken in July and Auguſt.

It rarely uſes its wings for flight, as the hind legs are formed for leaping; at one effort it will frequently bound to the diſtance of two or three yards.

FIG.

FIG. III.

CICADA VIRIDIS.

GREEN FROG-HOPPER.

SPECIFIC CHARACTER

AND

SYNONYMS.

Wing-cases green, with yellow margin; head yellow with two black dots,

CICADA VIRIDIS: elytris viridibus, capite flavo: punctis nigris. *Linn. Fn. Suec.* 896.
Fabr. Sp. inf. 2 *p.* 326. *n.* 26.—*Mant. inf.* 2. *p.* 271. *n.* 34.

Locusta pulex paullo minor.—*Raj. Inf.* 68. 3.

Ranatra virideſcens. — *Petiv. Gazoph.* 73. *Tab.* 76. *Fig.* 6. — *Geoff. Inf.* 1. 417. 5.
Fueſly. Inf. Helv. 24. 465.

CICADA *Viridis.*—*Fab. Spec. Inf. t.* 2. 326.

A ſpecies not uncommon, but leſs plentiful than the *C. Spumaria.* It is found in July and Auguſt, on aquatic plants; generally on the high ruſhes which abound in marſhy places.

PLATE LV.

PAPILIO URTICÆ.

SMALL TORTOISE-SHELL BUTTERFLY.

LEPIDOPTERA.

GENERIC CHARACTER.

Antennæ clavated. Wings, when at reſt, erect. Fly by day.

SPECIFIC CHARACTER.

Deep orange. Wings conſiderably indented. Above, on the ſuperior Wings, ſix black and two whitiſh ſpots. Inferior Wings, one large ſpot on each. A broad exterior black border, edged with black and yellow, and a row of light blue ſpots on each Wing. Underſide, black-brown with waves and daſhes of yellow, brown, &c.

Syſt. Ent. 505. 263.—*Linn. Syſt. Nat.* 2. 777. 167.
—*Fn. Sv.* 1058.—*Geoff. Inſ.* 2. 37. 4.

Papilio urticaria vulgatiſſima, rufo nigro cœruleo et albo coloribus varia. *Raj. Inſ.* 117. 1.
Robert. Icon. Tab. 5.
Huffn. Pict. 2. *Fig.* 16.
Merian. Europ. 44. *Tab.* 44.
Albin. Inſ. Tab. 4. *Fig.* 51.
Schaeff. Icon. Tab. 142. *Fig.* 1. 2.
Goed. Inſ. 3. *Tab.* 3.
——————— *&c. &c.*

A very beautiful ſpecies of the *Papilio*; and, were it leſs frequent, would be infinitely eſteemed for the elegant combination of its colours; but is at preſent little regarded. The old Flies are obſerved in May, the Caterpillars are hatched about the middle of June; in July they are full fed, and caſt their laſt exuviæ: they transform into Chryſalis, in which ſtate they remain only fifteen days, and then burſt forth a Papilio.

They continue to breed in vaſt quantities during the warm weather; and have, if the ſeaſon be favourable, ſeveral broods before the winter.

The Chryſalis is brown, but often aſſumes much of a golden hue; and, though not its common appearance, is ſometimes ſeen entirely of a rich gilded, or gold colour; but this is unnatural, and generally indicates that the Caterpillar has been ſtung by the Ichneumon Fly. The Caterpillars are taken on the Nettle *.

* *Urtica Dioica. Linn.*

PLATE LVI.

FIG. I.

PYROCHROA COCCINEA*.

SPECIFIC CHARACTER.

Beneath, Legs and Antennæ black. Head, Thorax and Shells bright red, inclining to brown.

The above Inſect which *Fabricius* has, after that celebrated French Naturaliſt Geoffroy, made a new genus, under the title *Pyrochroa* *, has in general been conſidered by the Collectors of Inſects as the *Cantharis Sanguinolentæ* of Linnæus; but this cannot be the caſe, as the deſcriptions by no means correſponds; nor is it the *Lampyris Coccinea* of that author, as quoted by Fabricius; we are therefore inclined to think, that notwithſtanding it is ſo plenty with us, it was unknown to the Swediſh Naturaliſt at the time he wrote; eſpecially as the ſpecimen was not contained in his cabinet.

It is very common in England, in Jnly.

* *Geoff. Inſ.* 1. 388. 1. *tab.* 6. *fig.* 4.

PLATE LVI.

FIG. II.

SILPHA QUADRIPUNCTATA.

COLEOPTERA.

GENERIC CHARACTER.

Antennæ clavated, foliated. Head prominent. Thorax margined.

SPECIFIC CHARACTER.

Head, Antennæ, and Legs black. Thorax yellow, with a large ſpot of black. Shells yellow, with four ſmall black ſpots. Length half an inch.

Appears local to certain parts of this kingdom: is ſometimes taken by beating the Oaks in Caen-wood, near Hampſtead, in July; it is, however, rare.

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PLATE LVII.

FIG. I.

PHALÆNA LAMDELLA.

TINEA.

SPECIFIC CHARACTER.

Superior Wings bright yellow brown, with a triangular dark ſpot, extending obliquely from the inferior margin, to the center of the Wing, and terminated by a minute detached ſpot of the ſame colour.

A non-deſcript, and has hitherto only been taken on Epping-foreſt: the brood was diſcovered in a furze-buſh, by Mr. Bentley, an eminent Collector of Inſects, in July 1789; the Cabinets of ſeveral Naturaliſts have been ſupplied from the parcel then taken, as the Species has rarely been obſerved ſince.

We prefer the name *Lamdella*, as the form of the Greek *Lamda* (λ) is well characterized, on the ſuperior Wings.

FIG. II.

PHALÆNA AURANA.

PYRALIS*.

SPECIFIC CHARACTER.

Superior Wings brown, with two orange ſpots on each; inferior Wings brown.

Syſt. Ent. 653. 48.—*Fabri. Spec. Inſ.* II. 286. 66.

* *Fab. Gen. Inſ.*

AN

An elegant Species of the minuter kinds of Lepidopterous Insects: it derives its name from the spots of bright orange, or gold colour, which are on the superior wings: is very rare: our specimen was taken in Kent, late in July; it appears peculiar to that county only, or is certainly very unfrequently, if ever, found elsewhere.

Larva unknown.

FIG. III.

PHALÆNA APICELLA.

TINEA.

SPECIFIC CHARACTER.

Grey. A circular spot of gold, or orange colour, at the apex of each superior Wing.

Non-descript, and is also very rare. Our specimen was procured by beating a White thorn-bush, on Epping-forest, early in May.

The orange spot on the ends of the upper wings afford the most striking distinction for a Specific Character; we therefore denominate it Apicella.

WISHING to compriſe ſuch information as may recommend our Work, to a general Claſs of Readers, we are abſolutely compelled to deviate from that uniform path which we at firſt intended to purſue; by introducing the figures of ſome Moths before we can procure their larva; we promiſe this will rarely occur, except with Inſects whoſe larva are unknown; and the Author will ſpare no expence, or trouble, to attain even thoſe: but, were he to refuſe a place to the many valuable ſpecimens recently diſcovered, it would be very diſpleaſing to the greater part of his Subſcribers; therefore, as an invariable obſervance of ſuch intention, promiſes only to exclude the moſt rare of our Inſects, we cannot always indulge it: on this plan, in the firſt Volume we could neither have repreſented the Phal. Batis, *Peach Bloſſom*, as the larva has only once been found; or the Phal. Chriſternana, whoſe larva is unknown*: Theſe are Inſects which few Cabinets in England poſſeſs; hence the figures muſt be very acceptable, and their rarity a ſufficient apology for their premature introduction.

* The Caterpillars of a very ſmall portion of minute Moths are known; and many Species in the adult ſtate are ſo very rare, as to have eſcaped the attention of the moſt accurate Entymologiſts. Of the number which are aſcertained as natives, very few are hitherto figured, or even deſcribed.

PLATE

PLATE LVIII.

FIG. I. I.

PHALÆNA PRUNIELLA.

LEPIDOPTERA.

GENERIC CHARACTER.

PHALÆNA.

Antennæ taper from the baſe. Wings, in general, contracted when at reſt. Fly by night.

TINEA.

SPECIFIC CHARACTER.

Superior wings brown, inclining to purple; from the interior margin is extended a broad white daſh along the poſterior margin, nearly two thirds of its length; but is interrupted near the extremity by a ſquare ſpot of dark brown. Inferior wings grey. Head and thorax white. Abdomen grey.

We have copied the name *Pruniella*, from that celebrated work of Clerk, ſaid to be executed under the immediate inſpection of *Linnæus* himſelf: He has figured it in the 11th Plate, Fig. 4. But the great ſcarcity of that work, there not being twelve copies in this country, can have contributed in a very ſmall meaſure to its being generally known; which indeed is the fact, as it does not appear any writer ſince that time has figured, or even deſcribed it. Some were, perhaps, ignorant of its having been figured in Clerk's Plates, which however, could not have been the caſe with *Linnæus*; but we cannot find that he has deſcribed it, or referred to Clerk's figure in any part of his works; though

though a copy of that book came not with the Linnæan collection, into the hands of Dr. Smith; nor can we trace any description of this moth in the writings of *Fabricius*; he also has not quoted the figure: We may hence conclude that although the insect is frequent in the months of June and July, it is little known, except with those who possess collections; and even many of that description are perhaps unacquainted with the circumstance of its having been named by Clerk, and probably by no other author.

Taken at Highgate.

FIG. II.

PHALÆNA MARGINELLA.

LEPIDOPTERA.

GENERIC CHARACTER.

PHALÆNA.

TINEA.

SPECIFIC CHARACTER.

First wings bright, pale brown, with a broad white margin. Second wings white.

Our present species was unknown to *Linnæus*; but according to his definition of *genera*, is one of the *tineæ*; it will be necessary, however, to distinguish it from the *tinea marginella* of Fabricius, which is a native of Germany, and altogether different; that writer, it is well known, divided many of the genera of Linnæus, and from their materials constituted an infinitely greater number; it was by such divisions he separated the *tineæ*, into the genera, *tineæ* and *alu-*

citæ, removing the *alucitæ* * of Linnæus under the title of *Pterophorus*.

He therefore uſes the ſpecific name *marginella* to his *tinea* and *alucita*. Our ſpecimen is deſcribed by him, under the name *Alucita marginella*. It is found on the juniper in May.

Taken at Dartford.

FIG. III.

PHALÆNA PAVONANA.

LEPIDOPTERA.

GENERIC CHARACTER.

PHALÆNA.

TORTRIX.

SPECIFIC CHARACTER.

Superior wings clouded with black and buff-coloured markings, and a very minute repreſentation of a peacock's feather at the apex. A dorſal ſpot of bright brown, ſurrounded with a deep black mark. Inferior wings grey brown, with the eye of the peacock's feather at the apex.

This ſingular Tortrix, which abounds with beautiful markings, is particularly diſtinguiſhed by the elegantly little mark at the apex of the upper wings, which appears like the feather of a peacock's tail:

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* The inſects diſtinguiſhed by this title are known by the trivial names *Plumes*, or *Fans*; their wings being entirely formed of feathers connected only near the baſe in the manner of a fan.

the ferruginous dorſal ſpot, ſurrounded with a thick black mark, although pretty, is by no means peculiar to this ſpecies, being common to ſeveral other minute moths: the clouded markings of black and buff-colour, interſperſed with ſilver, give this little animal a beautiful appearance, particularly under the microſcope. The under wings have a ſimilar appearance of a peacock's feather, but more obſolete at the apex.

We believe this ſpecies has never been deſcribed before, and very rarely taken. Our ſpecimen was found in Suſſex.—Auguſt.

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PLATE LIX.

FIG. I.

PHALÆNA PAVONANA

MAGNIFIED.

FIG. II.

PHALÆNA PRUNIELLA

MAGNIFIED.

We cannot ſelect more pleaſing objects for microſcopical inveſtigation, than thoſe two minute moths, eſpecially the firſt; the markings appear rather confuſed without the aſſiſtance of glaſſes, but a lens of a very ſmall power completely developes it of this imaginary obſcurity, and diſplays an elegance ſufficient to recommend it to our attention; but independent of ſuch conſideration, it will, it is preſumed, be conſidered as a material advantage to the deſcription annexed, to accompany the figure of the natural ſize with a microſcopical repreſentation; not to enforce that ſuch addition is indiſpenſibly neceſſary, but when moths like the preſent offer, whoſe marks, though beautiful, appear confuſed, it will certainly much aſſiſt to its neceſſary information; as well as in future to determine the ſpecies itſelf.

PLATE LX.

CURCULIO SCROPHULARIÆ.

COLEOPTERA.

GENERIC CHARACTER.

Antennæ elbowed in the middle, and fixed in the ſnout, which is prominent and hairy. Joints in each foot four.

*** *Long ſnout. Thighs dentated.*

SPECIFIC CHARACTER.

Somewhat ſpherical. Thorax narrow, beſet with yellow-white hairs. Shells black brown, ſtriated; a large black ſpot on the future, on each ſide of which are two ſmall ſpots. Length three lines.

Syſt. Ent. 140. 68.—*Linn. Syſt. Nat.* 2. 614. 61.
—*Fn. Sv.* 603.

Geoff. Inſ. 1. 296. 44.
Degeer Inſ. 5. 208. 3. *Tab.* 6. *Fig.* 17. 18. 19. 20.
Liſt. Scarab. Angl. 395. 35.
Reaum. Inſ. 3. *Tab.* 2. *Fig.* 12.

This ſingular little inſect feeds, when in the larva ſtate, on plants of the *ſcrophularia* genus, (fig-wort), and thence receives its ſpecific name. The beetle is not uncommon in June, and is uſually found on the ſame plants as the larva: the minuteneſs of this creature evades a complete diſcovery of the uncommonly teſſelated appearance it aſſumes before the ſpeculum of an opake microſcope; our plate repreſents the chryſalis and beetle, natural ſize, together with a conſiderably magnified figure of the latter.

PLATE LXI.

PHALÆNA STRAMINEA.

LEPIDOPTERA.

GENERIC CHARACTER.

Antennæ taper from the baſe. Wings, in general, contracted when at reſt. Fly by night.

NOCTUA.

SPECIFIC CHARACTER.

Antennæ and tongue deep yellow. Head and thorax covered with long hairs; which, with the ſuperior wings, are pale yellow, or bright clay colour; in the middle of the ſuperior wing is a kidney-ſhaped ſpot of dull grey, encloſed by a dark reddiſh brown line, which is united to the anterior margin by another ſpot of the ſame colour. Near the exterior margin is a broad obſolete band of pale brown, but where it touches the anterior margin it is darker; within this band are nine white ſpots, or points, and between the band and exterior margin of the wing, on the lower edge, is a bright black point; there are ſeveral other reddiſh brown points ſcattered upon the upper wing, near the baſe. The inferior wings are of a yellowiſh-white, with a ſhade of purple, a dark ſpot on the middle, and a pale black, broad border, with a white fringe.

This elegant ſpecies of the *Noctua* diviſion of Moths, appears to be not only a nondeſcript, but altogether unknown before; even to the beſt practical entymologiſts: That an inſect of ſuch magnitude ſhould have been unnoticed by *Linnæus*, or *Fabricius*, is not very ſingular, as ſeveral nondeſcripts of a ſimilar, and many of an inferior,

ſize, are to be ſeen in almoſt every cabinet; but that the ſpecies ſhould have eſcaped the reſearches of the moſt eminent collectors, is rather aſtoniſhing.

We have ſought every information which our connection would permit; and from the reſult we ſcarcely heſitate to pronounce the inſect of a nondeſcript ſpecies, and our ſpecimen to be perfectly unique; at leaſt it is a newly-diſcovered acquiſition to many ſcientific entymologiſts.

The original, whence the figure has been copied, is in the collection of the author; it was taken in a lane leading immediately from the wood at *Tottenham*, the laſt week in June, 1793. It was diſcovered in the evening, on a blade of graſs; and, from its wet appearance, as well as exquiſite preſervation, it had certainly juſt emerged from its chryſalis.

The Caterpillar may be ſuppoſed to be an underground feeder, and to ſubſiſt on the roots of graſs, &c. or one of that kind which comes only above the ſurface of the earth in the night.

PLATE LXII.

MUSCA ONOPORDINIS?

DIPTERA.

Wings two.

GENERIC CHARACTER.

A ſoft flexible trunk, with lateral lips at the end. No palpi.

SPECIFIC CHARACTER.

Head, thorax, and body, yellow brown. Wings, variegated with brown ſpots.

Syſt. Ent. 787. 80.
Fabric. Spec. Inſ. 2. 455. 105.

Whether this is the Muſca *Onopordinis* of Linnæus, as quoted, we cannot exactly determine; it anſwers to his deſcription of that inſect, but he ſpeaks ſo very conciſely, that we will not venture to aſſure ourſelves of his M. *Onopordinis* being our ſpecies. In this and many other inſtances we find, that though brevity is the greateſt excellence of the Linnæan deſcriptions, it is alſo their moſt eſſential fault.

The ſpecies may, with much propriety, ſtand under the name *Onopordinis*, as we believe it has never been figured before; and, ſhould the Linnæan ſpecies be hereafter diſcovered to differ from the preſent, a new name may be readily given to that inſect.

Flies in April and May, and is very common in the ſummer, in woods.

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PLATE LXIII.

FIG. I.

SILPHA THORACICA.

COLEOPTERA.

GENERIC CHARACTER.

Antennæ clavated, foliated. Head prominent. Thorax margined.

SPECIFIC CHARACTER.

Black. Three longitudinal lines on each ſhell. Thorax red-brown.

Syſt. Ent. 73. 6.—*Linn. Syſt. Nat.* 2. 571. 13.—*Fn. Sv.* 452.—*Stroem. Act. Nidroſ.* 3. *Tab.* 6. *Fig.* 1.

Silpha. Degeer Inſ. 4. 174. 3. *Tab.* 6. *Fig.* 7.

Peltis nigra, *&c.*—*Geoff. Inſ.* 1. 121. 6.

Scarabæus.—*Raj. Inſ.* 90. 10.

Caſida nigra, *&c.*—*Gadd. Satag.* 25.

Silpha Thoraçea. Scop. carn. 54.

Bergſtr. Nomencl. 1. 23. 5. *Tab.* 3. *Fig.* 5.

Schaeff. Icon. Tab. 75. *Fig.* 4.

Sulz. Inſ. Tab. 2. *Fig.* 12.

Taken at Charlton in June. It is a very rare ſpecies in every part of this country, though not unfrequent in Germany.

FIG.

FIG. II. III.

CASSIDA CRUENTATA.

COLEOPTERA.

GENERIC CHARACTER.

Antennæ knotted, enlarging towards the ends. Shells and thorax bordered. Head concealed under the corſelet.

SPECIFIC CHARACTER.

Bright green above, on each ſhell near the ſcutellum a very bright ſanguineous mark. Beneath, body and thighs black. Legs and feet light brown.

Is found on verticillated plants and thiſtles in May.

Although confounded by ſome with the common Caſſida (*C. Viridis*), it differs very eſſentially from that inſect: it is ſmaller; of a deeper green colour, and does not fade to a dirty brown after death: but the bright ſanguineous marks on the ſhells are ſcarcely viſible in a dead ſpecimen; the former is very common in May, but our ſpecies is rare.

C. Cruentata has never been either deſcribed or figured before.

FIG.

FIG. IV.

SILPHA OBSCURA.

COLEOPTERA.

SILPHA.

SPECIFIC CHARACTER.

Entirely black. Shells punctured; with three longitudinal lines on each.

Syst. Ent. 74. 11.—*Linn. Syst. Nat.* 2. 572. 18.
—*Fn. Sv.* 457.—*Scop. carn.* 57.
CASSIDA. *Udm. Diss.* 8.

Very frequent in May: breeds in corn-fields and meadows; but is found in many other situations.

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PLATE LXIV.

FIG. I.

CERAMBYX VIOLACEUS.

COLEOPTERA.

GENERIC CHARACTER.

Antennæ articulated, and tapering to the end. Shells long and narrow. Four joints in each foot. Thorax with lateral ſpines, or tubercles.

SPECIFIC CHARACTER.

Head, thorax, and ſhells, blue-purple. Legs, and underſide black.

Linn. Syſt. Nat. 2. 635. 70.—*Fn. Sv.* 667.
Degeer Inſ. 5. 88. 24.
Stenocorus violaceus. *Scopol. Ann. Hiſt. Nat.* 597. 59.
Cantharis, &c. *Gadd. Diſs.* 28.
Friſch. Inſ. 12. *Tab.* 3.
Callidium violaceum. *Fab. Spec. Inſ.* 1. 237. 5.

Is exceedingly rare in England. Our ſpecimens were taken on Epping Foreſt in June.

It is ſuſpected that this ſpecies, although now taken in England, was not originally a native, but by accident has been introduced into this country, from Germany, or ſome other part of Europe.

An ingenious collector * informs us, that thoſe taken at Epping are generally found exactly in the ſame place, and it is worthy a remark, on the ſame ſpot there are three poſts of foreign fir, which evidently

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* Mr. Bentley.

harbour a quantity of Larvæ; probably of this insect, though not yet determined.

Has been taken in different parts of the kingdom, and appears to be naturalized with us at this time.

FIG. II. III.

CERAMBYX HISPIDUS.

COLEOPTERA.

CERAMBYX.

SPECIFIC CHARACTER.

Head and thorax spined, brown. Shells, upper half white with cinereous clouds; lower, brown, with longitudinal ridges, and three strong spines on each, next the suture. Antennæ longer than the body, black and white alternately.

Linn. Syst. Nat. 2. 627. 30.—*Fn. Sv.* 651.
Geoff. Inf. 1. 206. 9.—*Fab. Spec. Inf.* 1. 215. 27.
Cerambyx fasciculatus. *Degeer Inf.* 5. 71. 9. *Tab.* 3. *Fig.* 17.
Scarabæus. Antennis articulatis longis. *Raj. Inf.* 97. 4.
Schaeff. Icon. Tab. 14. *Fig.* 9.
Frisch. Inf. 13. *p.* 22. *Tab.* 16.

One of the most beautiful of our Coleopterous Insects, and is common in certain situations during most part of the summer.

Fig. II. represents it of the natural size. Fig. III. magnified.

PLATE LXV.

FIG. I.

PHALÆNA INTERROGATIONANA.

LEPIDOPTERA.

GENERIC CHARACTER.

Antennæ taper from the baſe. Wings in general contracted when at reſt. Fly by night.

TORTRIX.

SPECIFIC CHARACTER.

Superior wings dark red-brown with an undulated line reſembling the note of interrogation on each. Inferior wings and body pale brown.

Is very rare, and has only been hitherto taken in the wilds of Kent, and ſome other diſtant parts of the country; our ſpecimen was taken in Auguſt.

An inſect ſo ſingularly marked, cannot readily be confounded with any other ſpecies, as we do not poſſeſs one which bears much reſemblance to it; the moſt ſtriking particular for a ſpecific diſtinction are the two waved lines of white on the ſuperior wings, which being contraſted with the brown colour, gives it a very unuſual appearance.

It is an undeſcribed inſect, and we have called it Phalæna Interrogationana, as the white undulated mark, if viewed ſideways, reſembles a note of interrogation.

FIG. II. III.

PHALÆNA SEMI-ARGENTELLA.

LEPIDOPTERA.

TINEA.

SPECIFIC CHARACTER.

Superior wings gold, with ſtripes of ſilver, inferior wings grey-brown.

Fig. II. natural ſize. Fig. III. magnified appearance.

Pha. Semi-argentella is without exception one of the moſt brilliant little moths we have; the natural ſize is ſcarcely ſufficient to diſplay its ſuperior elegance, but when examined by the microſcope, imagination cannot paint a more reſplendent object, for we inſtantly diſcover a moſt wonderful combination of all the varied ſhades of molten ſilver and burniſhed gold; its ſuperior wings are entirely adorned with plates which exhibit in one view the appearance of thoſe coſtly metals, but vary with every direction of light; that which appears gold in one point of ſight becoming red, or bright orange, while the ſhades which were before of a dark brown, aſſumes the reſplendence of burniſhed gold; the thorax glitters with the ſame ſplendor; the head, antennæ, and even the legs, partake alſo of this rich colouring in ſome changes of light; the inferior wings are of a very delicate texture, grey colour, changeable, and though comparatively ſmall, are ſurrounded by a deep fringe, which gives them the appearance of proportion.

We are unacquainted with the works of any author that contain a figure of this inſect, or we might perhaps be enabled to determine whether

whether it is not the *Pha. T. Seppella** of Fabricius; the deſcriptions nearly correſpond, but we are unwilling, without other proof, to give it that ſpecific name.

Until very lately it was conſidered as an exceedingly rare inſect, but ſeveral ſpecimens were taken at Highgate laſt ſummer.

FIG. IV.

PHALÆNA CURTISELLA.

LEPIDOPTERA.

TINEA.

SPECIFIC CHARACTER.

Superior wings, and thorax white, ſpeckled, and ſpotted with brown. Inferior wings and body pale brown.

This inſect is very uncommon, and though it has never been either figured or deſcribed before, it has been arranged in thoſe cabinets which poſſeſſed the ſpecimen, under the ſpecific name *Curtiſella*, after Mr. CURTIS, author of the *Flora Londinenſis*, &c.

The name was originally inſerted by Mr. MARSHAM, in his manuſcripts, and was intended as a compliment to the abilities of that ſcientific gentleman; it has not hitherto appeared in public, but we can feel no reluctance to adopt the ſame name.

* Alis auratis, ſtrigis duabus argenteis. *Gen. Inſ. Mant.* 296.

PLATE LXVI.

BOMBYLIUS MAJOR.

HUMBLE-BEE FLY.

DIPTERA.

Wings two.

GENERIC CHARACTER.

Trunk taper, very long, ſharp, between two horizontal valves.

SPECIFIC CHARACTER.

Body ſhort, thick, covered with thick yellowiſh down. Wings dark brown next the anterior margin; tranſparent next the poſterior margin. Legs long, ſlender, black.

Linn. Syſt. Nat. 2. 1009. 1.—*Fn. Sv.* 1918.

Bombylius variegatus, &c.

Degeer. Inſ. 6. 268. 1. *Tab.* 15. *Fig.* 10.

Aſilus, &c. *Geoff. Inſ.* 2. 466. 1.

Reaum. Inſ. 4. *Tab.* 8. *Fig.* 11, 12, 13.

Mouff. Inſ. 64. *Fig.* 5.

Scop. Carn. 1018.

Raj. Inſ. 273.

Schaeff. Icon. Tab. 79. *Fig.* 5.

Huffnag. Inſ. Tab. 8. *Fig.* 1.

Aldr. Inſ. 350. *f.* 10.

We

We have only three ſpecies of this genus in England, *Major*, *Medius*, and *Minor*.

B. Major is not very rare, its uſual time of appearance is June and July.

Together with other ſpecies of the Bombylius genus, it is ſometimes called the Sword-Bee-Fly: this appellation it receives from the ſingular form of its trunk; to aſſiſt our deſcription, we have repreſented its appearance when magnified, at Fig. I.

It hovers from flower to flower, when the warmth of the ſun invites it abroad, and extracts the nectar from flowers, by darting its proboſcis into them, but never reſts while feeding.

PLATE LXVII.

MELOE VARIEGATUS.

Scarce Meloe.

Coleoptera.

GENERIC CHARACTER.

Antennæ globular, the laſt globule oval. Thorax roundiſh. Shells ſoft. Head gibbous, and bent downwards.

SPECIFIC CHARACTER.

Head and thorax dull green, margined with red. Shells ſhort, dull green ſhagreened. Body large; above variegated with red, green, and copper colour; beneath purple. Legs reddiſh purple.

In form and ſize this ſpecies is not unlike the common Meloe *; but is far ſuperior to that Inſect, for the beauty of its colours: when the creature is alive the upper part of the body partakes of the moſt vivid colours, but thoſe colours become more obſcure after the Inſect dies;—this difference of the appearance, between the living and dead ſpecimen of the ſame ſpecies, is not peculiar to this Inſect only, but is commonly obſerved of moſt other kinds. The body is large in proportion to the other parts, but after death it is ſo contracted, or diſtorted from its natural ſhape, as to aſſume the appearance of an incoherent maſs; the ſkin ſo corrugated as to receive a falſe light on different parts of the ſurface, and conſequently the natural glow of

* M. Proſcarabæus.

the colours conſiderably decreaſed by the exhalation of that moiſture which ſerved to refreſh them in the living ſtate.

The underſide, from the greater tenacity of the ſkin, or ſhelly ſubſtance, is leſs liable to alteration than the upper ſide; it is entirely of a dark, but beautiful purple, which is changeable in proportion to the convexity of the body, to the moſt brilliant hues; the legs are alſo of a beautiful purple, with the appearance of bronze or copper colour intermixed.

It does not appear to be frequent in any part of Europe; even in Germany it is rarely, if ever taken: as one of the *Britiſh Coleopteræ* it is very little known, and is perhaps confined to the diſtant parts of Kent, where it is not generally diffuſed, but is found local to certain ſituations.

Mr. Crow, of Feverſham, very fortunately met with a brood of them laſt ſeaſon, and tranſmitted ſeveral ſpecimens to his friends in London. They varied conſiderably in ſeveral reſpects, and particularly in their colours; ſome appearing much more beautiful than others.

The male is ſmaller than the female; they ſecrete themſelves beneath the ſurface of the earth, and ſubſiſt on the roots of graſs, or herbage in general: are ſometimes found by turning up the mould, or may be obſerved crawling among the graſs. Come forth in April, or May.

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PLATE LXVIII.

FIG. I. II.

DYTISCUS MINUTUS.

COLEOPTERA.

GENERIC CHARACTER.

Antennæ taper, or clavato perfoliated. Feet villous and broad.

SPECIFIC CHARACTER.

Yellow-brown, Shells ſtriated, and marked with ſhort longitudinal ſtripes of black.

Fabri, Spec. Inſ. 1. 297. 36.
Chryſomela Minuta. *Linn. Syſt. Nat.*
Dytiſcus Minutus. *Linn. Syſt. Nat.* 2. 667. 23.—*Fn. Sv.* 778.
Dytiſcus Ruficollis. *Degeer. Inſ.* 4. 404. 18. *Tab.* 16. *Fig.* 9.

Linnæus placed this Inſect among the CHRYSOMELÆ, under the ſpecific name *Minuta*; but Degeer conſigned it to the DYTISCUS genus, and gave it the name *Ruficollis*: As a DYTISCUS it alſo appeared in the *Syſtema Naturæ*; and Fabricius, as well as other late Entomologiſts, have determined it to that genus, either calling it *Minutus*, or after Degeer, *Ruficollis*.

At Fig. I. is repreſented its appearance when magnified, and at Fig. II. the natural ſize.

Is not common; our ſpecimens were taken on *Epping Foreſt* in *June*. It is an aquatic Inſect, or one of that kind which paſſes through the ſeveral ſtates in the water, and ſubſiſts on the ſmaller kinds of Inſects, or on the fragments of macerated vegetables. Swims very ſwiftly.

FIG. III. IV.

DYTISCUS FERRUGINEUS.

COLEOPTERA.

DYTISCUS.

SPECIFIC CHARACTER.

Very convex. Above red-brown. Beneath paler.
Lin. Syſt. Nat.

FIG. III. natural Size, FIG. IV. magnified.

This Inſect is one of the ſame family, and was found at the ſame time and place as the preceding ſpecies. Is not very frequently met with.

FIG.

FIG. V.

DYTISCUS SULCATUS.

COLEOPTERA.

DYTISCUS.

SPECIFIC CHARACTER.

Shells brown, with four broad furrows, in which are grey-brown hairs. Head black, anterior part yellow, with tranſverſe ſtripes. Thorax black, with yellow marks. Beneath black.

Syſt. Ent. 231. 6.
Linn. Syſt. Nat. 2. 666. 13.—*Fn. Sv.* 773.
Geoff. Inſ. 1. 189. 5.
DYTISCUS *faſciatus*, &c. *Degeer Inſ.* 4. 397. 4.
HYDROCANTHARIS. *Raj. Inſ.* 94. 3. 10.
Friſch. Inſ. 13. *p.* 13. *Tab.* 7.
Roes. Inſ. 2. *Aquat.* 1. *Tab.* 3. *Fig.* 7.
Bradl. Nat. Tab. 26. *Fig.* 2. A.
Schaeff. Icon. Tab. 3. *Fig.* 3.
Bergſtr. Nomencl. 1. *Tab.* 5. *Fig.* 3. 4. 5. *Tab.* 7. *Fig.* 6. 7.

It is ſuſpected that the DYTISCUS *Sulcatus* is only the female of the DYTISCUS *Cinereus*, and by no means a diſtinct ſpecies, although Linnæus conſidered it as ſuch.

It is common in the month of *May*, and thence is found throughout the Summer. It paſſes through the different changes, and exiſts in the adult ſtate in the water; and like others of the ſame tribe, devours the ſmaller kinds of aquatic Inſect, or tender vegetables. It darts with aſtoniſhing ſwiftneſs in ſearch of its prey by the aſſiſtance of its hinder legs, which are well contrived for that purpoſe.

PLATE LXIX.

PHALÆNA RUBI.

FOX-COLOURED MOTH.

LEPIDOPTERA.

GENERIC CHARACTER.

Antennæ taper from the baſe. Wings in general contracted when at reſt. Fly by night.

No Trunk. Firſt Wings horizontal. Second erect.

SPECIFIC CHARACTER.

Antennæ feathered. Wings entire, with a whitiſh margin; two whitiſh tranſverſe waves on the firſt pair.

Syſt. Ent. 565. 35.
Linn. Syſt. Nat. 2. 813. 21.—*Fn. Sv.* 1103.
Wilk. Pap. 25. *Tab.* 3. *a.* 19.
Ammiral. Inſ. 32.
Roes. Inſ. 3. *Tab.* 49.

The females of this ſpecies are very rarely met with, as they conceal themſelves among the graſs; but the males are commonly taken when flying, and generally indicate that the females are near.

The Caterpillars will feed on the willow, but prefer the leaves of the bramble.

In

In this ſtate they are found about the latter end of June, July, or Auguſt; and remain ſo during the Winter. In April they change to the Pupa form, and in May they appear in the Fly ſtate.

The Moth has little to recommend it to notice; and the Pupa, like moſt others, is of a dull uniform black brown; it is therefore under the form of a caterpillar that it appears to moſt advantage.

1

2

3

PLATE LXX.

FIG. I.

SCARABÆUS TESTUDINARIUS.

COLEOPTERA.

GENERIC CHARACTER.

Antennæ clavated, their extremities fiſſile. Five joints in each foot.

SPECIFIC CHARACTER.

Head black without tubercles. Thorax black, punctured, and covered with ſhort ſoft hairs. Shells deeply and equally ſtriated, ſo as to produce even and regular ridges between the ſtriæ, which are of an obſcure black, ſprinkled with ſmall ſpots of a deep yellow. Feet are of a dirty brown colour.

This beautiful animal was deſcribed by *Fabricius* as an Engliſh Inſect in his firſt work, the *Syſtema Entomologiæ*, but we have never ſeen a ſpecimen of it before. A figure of this Inſect may be found in *Fueſly*, *Jablonſky*, and *Olivier*; but theſe works being in few hands, we truſt our figure will not be unacceptable to the Engliſh Entomologiſt.

Fig. I. The natural ſize denoted by a line.
Fig. I. The magnified appearance.

PLATE LXX.

FIG. II.

SCARABÆUS CONFLAGRATUS.

COLEOPTERA.

SCARABÆUS.

SPECIFIC CHARACTER.

The whole body black and ſhining, except the ſhells, which are teſtaceus, ſtriated, with an oblong ſpot, rather obſcure on each ſide near the external margin. On the head are three tubercles, the middle one larger than the others. Thorax convex and pointed.

This Inſect reſembles much the *Scarabæus Conſpurcatus*, but is a little bigger.

It is alſo figured by *Jablonſky* and *Olivier*, and is deſcribed by *Fabricius* in his new Work the Entomologiæ Syſtema.

Fig. II. The line ſhews the natural ſize.
Fig. II. Magnified appearance.

FIG.

FIG. III.

SCARABÆUS QUADRIMACULATUS.

COLEOPTERA.

SCARABÆUS.

SPECIFIC CHARACTER.

Head black, without tubercles, but has two little protuberances over the mouth. Thorax black, ſhining, convex, and covered with impreſſed points. Shells black, ſtriated, with two red ſpots on each, one ſmall at the baſe near the outer margin, the other larger near the apex. Underſide, feet, and antennæ are black and poliſhed.

We are of opinion that the three Inſects in the annexed plate will be new to moſt of our Engliſh Collectors, notwithſtanding they are to be found in this country.

As it would be very difficult, if not impoſſible, to give a juſt repreſentation of theſe minute Inſects in the natural ſize, we have preferred giving the magnified appearance; the outlines which accompany each, and bear the ſame numbers, denote the true ſize of the original ſpecimens.

Fig. III. The line ſhews the natural ſize.
Fig. III. Magnified appearance.

This ſpecies is deſcribed by *Linnæus*, *Fabricius*, and other authors, and has been figured by *Olivier* and *Jablonſky*, being frequently met with in foreign cabinets. It is the ſmalleſt of this genus.

Olivier deſcribes this inſect as having the antennæ and feet red; but it is not ſo in our ſpecimen.

PLATE LXXI.

PHALÆNA VILLICA.

CREAM-SPOT TYGER MOTH.

LEPIDOPTERA.

GENERIC CHARACTER.

Antennæ taper from the baſe. Wings in general contracted when at reſt. Fly by night.

* No Trunk. Wings depreſſed, deflexed. Back ſmooth.

SPECIFIC CHARACTER.

Antennæ, head, and thorax black, with a white ſpot on each ſide the latter. Firſt wings black, with eight large cream-coloured ſpots. Second wings and body orange, with black ſpots.

Syſt. Ent. 2. 581. 85.
Linn. Syſt. Nat. 2. 820. 41.
Geoff. Inſ. 2. 106. 1.
Harris. Aurel. Tab. 4.
Raj. Inſ. 156. 4.
Alb. Inſ. Tab. 21.
Friſch. Inſ. 10. *Tab.* 2.
Reaum. Inſ. 1. *Tab.* 31. *Fig.* 4. 6.
Roes. Inſ. 4. *Tab.* 28. *Fig.* 2.
——— *Tab.* 29. *Fig.* 1. 4.
Wilk. Pap. Tab. 3. *a.* 2.

Chickweed is a favorite food with the Caterpillars of this Inſect, but it will eat the leaves of the currant, white-thorn, nettle, graſs, &c. if the former cannot be readily procured.

The Caterpillars are black and foxy, or hairy; but in a leſs degree than the Caterpillars of Ph. Caja, Great Tyger Moth, which we have figured in the early part of this work.

About the latter end of April the Caterpillars have attained their full ſize, and change into chryſalis; late in May they appear in the winged ſtate.

It is by no means ſo frequent as the Great Tyger Moth, though not very rare; but it is infinitely ſuperior for the happy combination of its colours to it, or either of the Britiſh ſpecies of that tribe which are trivially termed Tygers: it is already high in the eſteem of collectors; and were ſpecimens of the kind leſs common, it would be in great requeſt among the Engliſh Entomologiſts.

Frequents banks which face the riſing ſun.

PLATE LXXII.

CERAMBYX ÆDILIS.

LONG-HORNED CERAMBYX.

COLEOPTERA.

GENERIC CHARACTER.

Antennæ articulated, and tapering to the end. Shells long and narrow. Four joints on each foot. Thorax, with lateral ſpines or tubercles.

SPECIFIC CHARACTER.

Antennæ conſiderably longer than the body. Head, thorax, and ſhells grey, with ſhades of brown, ſprinkled with yellow, and dark brown ſpots. Thorax ſpined.

Syſt. Ent. 164. 1.—*Linn. Syſt. Nat.* 2. 628. 37.—*Fn. Sv.* 653.

Cerambyx, &c. *Linn. It. Oel.* 8.

Degeer. Inſ. 5. 66. 5. *Tab.* 4. *Fig.* 1. 2.

Capricornus ruſticus. *Petiv. Gazoph. Tab.* 8. *Fig.* 8.

Mouff. Inſ. 151. *Fig.* 2.

Friſch. Inſ. 13. *Tab.* 12.

Sulz. Hiſt. Inſ. Tab. 4. *Fig.* 27.

Act. Nidroſ. 4. *Tab.* 16. *Fig.* 8.

Schaeff. Icon. Tab. 14. *Fig.* 7.

Bergſtr. Nomencl. 1. 3. 5. *Tab.* 1. *Fig.* 5. 6. *Tab.* 2. *Fig.* 1.

Fab. Spec. Inſ. 1. 209. 1.

This ſpecies is found in every part of Europe, though very ſcarce; and in England it is extremely rare.

And

And it is no leſs diſtinguiſhed for the very ſingular ſtructure and length of its antennæ, than for its rarity; that part which forms one of the moſt certain characteriſtics of almoſt every tribe of Inſects, conſtitutes the moſt prominent character in this.

Of its uſe, we are altogether ignorant, as the various opinions that have been given by former writers are now obliterated; ſome have ſuppoſed that they were the organs of hearing, or ſmell; and others have imagined that they were ſuſceptible of the leaſt motion in the ambient fluid in which they move.

Geoffroy diſcovered the organs of hearing in ſeveral amphibious animals, viz. in the toad, frog, viper, ſome other ſerpents, lizard, water-ſalamander, and ſkate*; and many of the moſt eminent anatomiſts of the preſent time have diſcovered by their reſearches into the animal kingdom, thoſe organs in different creatures. Profeſſor Camper, in 1763, publiſhed remarks on the organs of hearing in fiſhes, in the Harlem Tranſactions†: Mr. Hunter has deſcribed others in the Philoſophical Tranſactions‡; and Dr. Monro has deſcribed and figured great variety of them in his large work on the ſtructure and phyſiology of fiſhes.

Probably, induced by thoſe diſcoveries profeſſor Fabricius endeavoured to aſcertain the organs of hearing in Inſects alſo; and about nine years ago publiſhed an account of this intereſting diſcovery in the New Copenhagen Tranſactions §, with figures of thoſe organs in the crab and lobſter: he found the external orifice of the organ in theſe animals to be placed between the long and the ſhort antennæ, the cochlea, &c. being lodged in the upper part, which Linnæus calls the thorax, near the baſe of the ſerrated projection at its apex; we muſt therefore conclude that the antennæ of Inſects are appropriated for ſome other purpoſes than thoſe it is at preſent ſuſpected they anſwer.

The Cerambyx Ædilis, Fabricius informs us, lives in the trunks of trees; its horns are moveable, as it can either direct them forward, or ſupport them in an erect poſition; and when it ſleeps, it reclines them along its back; it alſo reclines them when it walks quick, or has to paſs through a narrow track, as the leaſt reſiſtance from any thing in its way, would be very liable to injure, or break them off.

Our ſpecimen was taken in May.

* Memoires Etrangers de l'Acad. de Paris, 1755.

† In the Year 1763, &c. ‡ Vol. lxxii. § Vol. ii. p. 375.

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